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It is a very great honor to serve as President of this Association, and for this distinction which you have conferred upon me I again desire to express my deep gratitude. Election to this high office carries with it definite responsibilities and duties, not the least of which is the preparation of an address. The fact that I succeed so many presidents who have made in their addresses notable contributions to psychiatry renders this duty even more weighty than it would otherwise be. The search for a subject that would be of interest has been a difficult task and one that has given rise to personal misgivings, relieved, however, in part by the reflection that this address is not open to discussion.

Since the last meeting articles of incorporation have been secured for the Association and at the session to-morrow action is to be taken on amendments to the constitution, which, if accepted, will be of far-reaching importance to the future of psychiatry. Favorable action on these amendments will complete the first step in the realization of a plan of organization conceived by Dr. William A. White, to have all the various societies of allied interests meet at the same time, thus creating in effect an annual congress of mental medicine.

One hundred years have passed since the death of Pinel. Yesterday, at the Sorbonne in Paris, were held suitable exercises under the auspices of a distinguished group, in honor of the memory of the passing of this great reformer. The present is, then, an appropriate time to reflect upon the progress which has been made in

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the care of the mentally ill, and perhaps also to speculate upon what the future may be expected to bring forth.

The conditions of abuse, neglect and ignorance in the institutional care of the so-called insane before Pinel's time gave us our word "bedlam," and were such as to make these institutions places of filth and horror. Pinel and Tuke inaugurated the humanitarian movement which has progressed steadily and which has reached its culmination in the work of Mr. Clifford W. Beers. Even with the development of humanitarianism, however, the institutions still were but "asylums," places where custodial care—presumably kindly, but still only custodial—was provided.

The past twenty-five years have seen a transition from the asylum idea toward that of the hospital, an institution for not only the care, the clothing and feeding, of the patient, but also for his treatment, for a scientific attempt to restore him to a life of usefulness. As a corollary of the hospital ideal, the administration of these institutions has been progressively removed from politics and placed in the hands of trained physicians who can be assured of a continued tenure without interference which, of necessity, impairs efficiency. The spoils system is wholly incompatible with medical ideals.

Yet from time to time mental hospitals are not only subjected to criticism but features of their operation are made to serve as political issues at the hands of politicians. The destructive influence so frequently injected into our professional work by politicians of small caliber who deliberately attack well-administered hospitals and play upon the easily excited sympathies of the public is almost always effected for the sole purpose of focusing the public attention upon themselves or otherwise contributing to their aggrandizement. If criticism is constructive it is always welcomed by those responsible for the administration of the mental hospital, for in this way attention is directed to the need of legislative action and public support to remedy conditions. Those charged with the responsibility of the care and treatment of the mentally sick, who through continued effort endeavor to restore patients to their rightful places in society, might personally well ignore such attacks voiced by the small politician, the paid reformer, and other misguided individuals. However, damage is usually inflicted in another

direction, inasmuch as the lay mind often becomes confused, takes more or less stock in unwarranted criticism and when the temporary excitement subsides it is found that carefully formulated plans for progressive treatment are hindered in execution or completely wrecked. Such attacks, by distracting and unsettling the administration of the hospital, cause the welfare of the patients to suffer. Almost as unfortunate is the effect upon the relatives and friends of patients, whose minds are filled with misgivings as to the care being received by the patients in whom they are interested. High-minded politicians do not resort to this practice, being cognizant that the great majority of hospitals of all classes are conducted as well as can be with the funds and equipment available. Through educational effort, the public should learn that there is no place for unwarranted propaganda which tends to shake, even if only temporarily, the confidence of the public.

The past year has witnessed an attack on the mental hospital of the United States Government—Saint Elizabeths Hospital in Washington, D. C.—regarding which you have been fully informed. The attack itself, wholly unwarranted and thoroughly discredited, might otherwise well be ignored could it not be made to serve a useful and constructive purpose. Very few states at present have a hospital system adapted for the intensive training of personnel, particularly medical personnel. The Federal Government might well utilize Saint Elizabeths Hospital, now a bureau of the Department of the Interior, as a Federal Bureau in Psychiatry in the largest sense. This hospital, ably administered, where the scientific aspects of mental disease have long been emphasized, could well serve as a teaching center to a far greater extent than it is and be made available to the various states. A project of this sort would not in any way interfere with states' rights, nor could the Federal Government be accused of paternalism in offering to the states the benefits of the clinical material and the accumulated knowledge already at hand. The benefits would accrue overwhelmingly to the states which desired to take advantage of the opportunity. Therefore, the Association might well recognize a very great opportunity, and express its belief that conditions are right and the time propitious for action. I would accordingly recommend that the Secretary of the Interior be me-

morialized, pointing out the desirability of such a plan to make Saint Elizabeths Hospital of even greater service and inspiration than it now is to the cause of psychiatry. It is further suggested that the Association authorize the appointment of a committee prepared to assist the Secretary of the Interior, should assistance be desired, in the formulation of a plan to increase the scope of usefulness of Saint Elizabeths Hospital.

It is not very many years ago that the mental hospital was concerned only with the care and treatment of the patient in the hospital. The past decade, however, has witnessed a remarkable extension of the sphere of psychiatry beyond the walls of the mental hospital. The mental hygiene movement, with its stress upon the education of the public in the possibilities of psychiatry, has done much to promote this extension. In this field a state hospital system has a great opportunity to be of real service, and it is with reference to some of these activities in which a state department may well function that I wish to speak briefly. I speak of these possibilities because I believe that at the present time and probably for a long period in the future, once pioneering has demonstrated the soundness of activity, a state department is best fitted to render service. It is only within a few years and after no little effort that it has been possible to convince the Legislature of Massachusetts that with the expenditure of several millions of dollars a year for the care of the mentally sick in state hospitals, funds should be appropriated for preventive work by a department best equipped with personnel to carry on the work. Provision was accordingly made for the establishment of a Division of Mental Hygiene. This was the first state to recognize officially the importance of mental hygiene. In this Division of Mental Hygiene are lodged all the activities which are primarily concerned with the prevention of mental disease. In addition to well-defined research problems carried on in the laboratories throughout the state and under the direction of recognized leaders in particular fields, clinics have been organized and developed throughout the state which are associated with general hospitals. Of especial interest and practical value in the field of mental hygiene has been the establishment of "habit clinics," developed from the study of mental life of the pre-school child. These habit clinics became a part of the program

of the Division of Mental Hygiene in Massachusetts in the fall of 1922, and credit for their development and success as well as for the development and direction of the Division of Mental Hygiene, is due to Dr. Douglas A. Thom. From a single isolated unit looked upon at first as an experiment it developed into a very important activity of the Division, and at the present time nine habit clinics are operating once a week throughout the state, rendering service to the individuals of the community and the various social organizations. These clinics, operated under the direction of three psychiatrists with well-trained social workers and psychologists, have served as training centers for physicians, social workers, and those interested in clinical psychiatry, these students coming from various sections of the country. Not only those specialized in the field of mental medicine avail themselves of the opportunity of training at these centers, but many pediatrists and internists have become interested. The function of the clinic is to study the child of pre-school age and his immediate environmental conditions in order to prevent and eradicate undesirable habits, personal traits, and delinquent trends which are often forerunners of social maladjustments. Every effort has been made to develop the simplest and most practical methods of managing these problems concerning the early life of the child and disseminating this knowledge among parents, teachers, nurses and general practitioners. The habit clinic idea is recognized as one of the most practical and beneficial applications of mental hygiene. It is not claimed that mental disease will be prevented by wide-spread use of such clinics, but the fact has been clearly demonstrated by a recent survey of the first three hundred cases coming to these clinics that many of the personality traits, which if they persisted would become definite handicaps to the individual, can undoubtedly be permanently eradicated if dealt with during the plastic years of childhood.

The establishment of school clinics with a view to recognizing early cases of potential mental disease or personality deviation and mental defect—the aim in such cases being to provide special training or other attention where such is indicated—has been of very great importance in Massachusetts since 1919, when the mental examination of all children in public schools three or more

years retarded was required by law. So far as is known Massachusetts is the first state to begin and carry on the routine mental examination of backward children. It is believed that the results will be far-reaching and will serve to fix the responsibility for dealing with the largest number of feeble-minded where it belongs; namely, on the public school system and community. In connection with the school clinics the Department maintains a central registration of all feeble-minded who have been examined.

With reference to the work in mental hygiene, it is of interest to note the application of psychiatry to social case work, to industry, and to mercantile life, as well as the more recent developments in certain institutions of learning under the plan of a consulting psychiatrist for the student body. Business men are seeing the value of knowing the mental factors in labor turnover and in maladjustment to work assignment. No doubt their interest is largely a financial one, however much their social sense may be developed. Nevertheless, it is a definite indication that psychiatry is being recognized as having something practical to offer. Social agencies are realizing the value of a psychiatrist upon whom they may call in difficult cases. In Boston, for instance, a visiting psychiatrist has been employed by several social agencies acting cooperatively, and the experiment has proved a striking success. As a result very largely of the vision and pioneering of the late Dr. Walter E. Fernald, the community supervision of mental defectives has been developed greatly. The idea that mental defectives are of necessity institutional cases has been disproved, and it has been conclusively demonstrated that many, if not indeed most, mental defectives with a greater or less degree of supervision, may be made self-supporting and self-respecting members of the community. Here, again, psychiatry and psychiatric social work have gone out beyond the field which formerly was considered that of psychiatry and their success here in a social as well as an economic way well justifies their efforts. In the development and carrying out of a definite state program for the care of the mentally defective there has resulted, on the part of the community, a knowledge of the subject of mental deficiency and on the part of the state a recognition of the fact that the state schools should be placed on the same financial basis as the mental hospitals. Increasing the amount available

for the maintenance of the state schools has placed the educational, the social service and the industrial training departments on a much higher level and has provided the children with a far better training than was possible heretofore. It has also resulted in the replacement of strictly custodial care by an attitude of thoroughgoing education within the school as a preparation for return to community life. The development of parole, Dr. Walter E. Fernald's ten fields of inquiry as a diagnostic aid, and the establishment of the school clinics previously referred to, have contributed a great deal to the progress and success of the state's program for dealing with this very large and important problem. Certainly there has come about a remarkable awakening of the social conscience of the people of Massachusetts in regard to the subject of the mentally deficient. Educators are appreciating their responsibilities to a greater degree and are making more of an effort to deal with the problems in the community before serious asocial tendencies have developed in the children. Before very long it will be possible from the work now being done to forecast accurately the extent to which a state must make institutional provisions for the care of the mentally deficient. It is of very great importance to secure this information, the question always being raised when additional funds for an extension of the schools for the feeble-minded are requested. It will be noted that it is our belief that the problem of the mentally defective is very largely the responsibility of the local community, assisted and supervised in every possible way by the state. Now the child enters school and on his failure to make his grade is given a painstaking examination by a skilled psychiatrist, who advises the school authorities and the parents as to the proper way of caring for him. Special classes have been established in charge of qualified teachers with a knowledge of the educational needs of the mentally deficient whose aim it is to bring out the latent possibilities of each child and train him as well as may be for a place in society. Never before, it seems to me, has the future of the mentally deficient child been so bright as it is at present.

In penal institutions the fact that psychiatry can be an aid in dealing with disciplinary problems and in the assignment of occupation, as well as aiding in arriving at judgment in the desirability of parole and other forms of special treatment, is being generally recognized by institutional administrators. Illinois, Massachusetts,

New York and Wisconsin may be cited as examples of the practical application of psychiatry to prison problems. Most of the attention of prison psychiatrists has heretofore been directed toward the so-called " serious offenders," the inmates of the reformatory and state prisons or penitentiary. The surveys conducted by the National Committee for Mental Hygiene have drawn attention to the fact that in the county jails as well, psychiatric problems exist. The facts alone that 90 per cent of all commitments to penal institutions are made to these county jails and that fully one-half of the individuals so committed are recidivists, are in themselves enough to challenge attention. It may, therefore, be of interest to mention the fact that in Massachusetts the routine examination by the Department of Mental Diseases of inmates of these county penal institutions, involving not only psychometric and psychiatric observations, but social history as well, is required by statute. When a sufficient number of these cases has been accumulated to warrant conclusions an analysis will undoubtedly furnish many facts of interest regarding the relationship of psychiatry to the criminal problem.

The relationship of psychiatry to penology prompted me to communicate with the president of the American Prison Association, suggesting a closer relationship between that association and our own, and extending an invitation to the president or one designated by him to represent that association at these meetings. I am very happy to report that Mr. W. F. Penn, president of the American Prison Association, heartily approved of the suggestion and has done us the honor to delegate his resident physician to represent the American Prison Association at these meetings. As evidence of our appreciation of the willingness to cooperate in matters of common interest, I would recommend that the president be authorized to designate one or more of our members to represent this Association at the Annual Congress of the American Prison Association.

The recent action of Governor Smith of New York in appointing as head of the correctional department of that state a psychiatrist, Dr. R. F. C. Kieb, is worthy of especial note. This appointment, quite aside from the fact that Dr. Kieb is an administrator and psychiatrist of recognized ability, is an evidence of the

growing realization on the part of the laity that psychiatry can contribute to a more intelligent and efficient handling of penological problems.

Much has been said, especially during the last few years, both by responsible persons and by others concerning the value of the testimony of psychiatrists in cases coming before the court, particularly on the criminal side. The fact that the law in most jurisdictions confines itself chiefly to questions of what it is pleased to call " Responsibility " has hampered considerably the efforts of psychiatrists to place before the courts a clear conception of mental diseases and mechanisms. Then, too, the fact that experts are usually introduced as partisan, has done much to undermine the confidence of the laity in the value of expert testimony. As a result such testimony has fallen into disrepute and psychiatry has suffered in the eyes of the courts and the public. It has been of interest to note how many bodies are to-day giving attention to means of restoring expert testimony to a condition which may demand the respect of the community and the confidence of the courts. That this interest is not confined to the medical profession is evidenced by the fact that the American Bar Association, the American Institute of Criminal Law and Criminology, and the National Social Science Research Council are engaged in consideration of this very problem. As for medical groups, the American Medical Association and The American Psychiatric Association are devoting much attention to this subject, and I bespeak for your careful consideration the report of the Committee on Legal Aspects of Psychiatry of this Association which is to come before this meeting for action. The fact that responsible and thoughtful groups like those mentioned are considering the same problem with the same purpose in view is a most hopeful one and makes one confident of the future. In considering the reform of procedure along these lines, it is especially important that the varying view-points be considered. As psychiatrists, we have our own views of what is desirable. We should not forget, however, that court procedure is something which has evolved over a long period of years and that it is based on certain fundamental principles of the English common law as well as upon the Constitution of the United States and of the various states. The law and legal procedure are matters which must change slowly, if they are to have the confidence of the public and if stability

is to be preserved. New matters cannot be taken up and incorporated into the body of legal usages until they are on a thoroughly sound basis. It behooves us, therefore, not to be impatient, but on the other hand recognize the fact that we have no monopoly of the truth, and that other things must be considered than the purely psychiatric point of view. With the recognition of the fact that the law and psychiatry have in this matter a common purpose and that for accomplishment of this purpose mutual understanding and a desire to be fair are essential, we may safely feel that such mutual understanding will be brought about and that the future will see a renewal of general confidence in the psychiatrist as an advisor of the court. Contributing largely in Massachusetts to placing expert psychiatric testimony on a basis that is restoring confidence was the passage of an act in 1921 calling for the mental examination and report to the court prior to trial of all who have been indicted for a capital offense, and of all those indicted or bound over for a felony who have been previously convicted of a felony or twice indicted. This statute is often referred to as the "Briggs Law," after Dr. L. Vernon Briggs, who was largely responsible for the passage of this important legislation.

The constantly increasing importance of psychiatry in relation to problems other than those dealing with the hospital care and treatment of the mentally sick, directs attention to new responsibilities which should be recognized as well as opportunities that should not be overlooked, in the contacts existing and forming between psychiatry and the fields of the various social sciences. In our studies of the individual patient and of the forces influencing the personality, we are constantly faced by the important relationship existing between the individual and his family; his teachers; his social group in the school; his companions; his economic situation; his community life and standards of morality; the rôle of each parent; the rôle of physician among the children in the family; the effect of parental control and self-restraint; respect for authority; for property; for higher moral values; all these have a marked influence on the individual's life plan. Statistics of this kind have been assembled for some time, and based on this information there have been formulated more rational policies both in the administration of corrective measures, as, for example,

juvenile courts and the parole system—and in the form of mental hygiene programs, particularly child guidance. From the facts secured by group workers in the field of psychiatry as to the various factors which in the life of the individual lead ultimately to inefficiency or mildly psychopathic traits, or to crime and the psychoses, there has been derived much information that is of great value to the scientifically minded in the fields of the various social sciences. At the same time other groups representing the social sciences have secured, through their scientific work and study, information of great value to psychiatry. Not only has psychiatry something to contribute to those who are engaged in social problems, but it is believed that this Association should seek an opportunity to present its views and to cooperate with agencies in social science fields to the end that mutual benefit may be derived. Accordingly I would recommend that The American Psychiatric Association take the initiative in this matter and through a special committee, say of five, investigate the possibilities of an opportunity to present our views to the leaders in the various social sciences and discuss with them the desirability of cooperation. I have in mind that a committee named for the purpose could ascertain the possibility of establishing contacts with the Social Science Research Council. In this way there might result a better understanding and an elimination of waste motion in the progress of psychiatry.

The introduction of psychiatric social service and its development are among the outstanding achievements of recent years. Social work in the psychiatric field is gradually becoming a recognized part of psychiatric service, particularly in hospital and mental hygiene activities.

Because of its technic and knowledge of community resources, social service is able to assist the hospital to increase the number of outgoing patients and to provide a means of hospital extension care. In efficient psychiatric social service lies the greatest hope of markedly increasing the number of patients returned to the community who otherwise would require continued treatment in hospitals. The relative cost of such service alone compared to hospital maintenance is of direct economic value. The development of this phase of social service alone contains almost unlimited possibilities.

Closely allied to the economic value is the scientific value which refers particularly to the contributions of social data to psychiatry by means of histories—studies—case work, etc. The analysis of social factors furnishes a basis upon which plans for social treatment are built and executed by the social worker. Because social work does not stop with the collection and analysis of social data but is much concerned with the evaluation of social factors and their relation to experience—the philosophical aspect of social work is perhaps its most important and vital feature. Possibly in no field is this combination of so much use as in the field of psychiatry.

The future usefulness of psychiatric social work will doubtless depend upon the degree to which professional standards are established and maintained. It is of the greatest importance that the social service personnel be composed of well-educated, trained social workers (preferably psychiatrically trained). Departure from this standard must inevitably result in a form of after-care or so-called "follow up" work is in no sense psychiatric social work. Such service will be neither progressive nor scientific because of the limitations which naturally arise from miscellaneous functions which may have no special bearing either upon psychiatry or social work.

It is at the mental hospital, especially the state hospital, where practical experience can be had as a part of the training of certain groups of personnel. This is particularly so with reference to the training of psychiatric social workers and occupational therapists. The Boston School of Occupational Therapy has recently provided in its curriculum for a six-month period of practical training in a mental hospital.

The question of providing our mental hospitals with an adequate and well-trained nursing service is old, but has lost none of its importance or interest to us.

Years ago this Association, recognizing the necessity of improving the care of the mental patient, appointed a standing committee on nursing. To meet the requirements of our own needs and to keep in step with a movement in the nursing world, the committee's recommendation for a standardization of nurses' training schools in mental hospitals was adopted. It was felt that the establishing of a list of accredited schools meeting the standard requirements of this Association and the issuing of approved certifi-

cates to these schools would not only elevate the standard of nursing care, but would stimulate and probably increase the number of schools of nursing in psychiatric hospitals. At present 69 schools of nursing in mental hospitals have been approved in the United States and Canada. That progress has been made cannot be denied.

A recent report on the training schools for nurses in hospitals in this country published in the *Journal of the American Medical Association* shows that whereas nearly half of all hospital beds in the United States are used for the mentally sick, only about 5 per cent of the student nurses are in the mental hospital training schools and these training schools represent only about 8 per cent of the total number. The conclusion cannot be other than that we are supplying from these psychiatric schools of nursing only a very small proportion of our nursing needs, and the outlook is that this particular type of trained nurse, rather than increasing in number, will decrease.

Undoubtedly you are all aware that the whole subject of nursing is becoming a troublesome one to the medical profession as well as to the public-at-large, and that a movement has been started to solve the problem and improve the situation by the attempt to grade the various schools of nursing. A committee representing three national nursing associations, the American Medical Association, and other organizations of like nature, is now making a survey for the purpose of grading schools. So far, this committee has not seen fit to include our organization or a psychiatrist, although we represent the largest single interest in the whole nursing field. I cannot see how this program of grading of schools can be properly completed without taking into consideration our special interests and needs.

The practice of psychiatry has changed and is changing. Its scope of need and usefulness is increasing year by year and, of course, with it there has increased the need of the nurse trained at least to some extent in psychiatry. Even if there were well organized and large training schools in all mental hospitals, I question whether the situation would be adequately met.

It is only a few years ago that psychiatric training as a part of the equipment of every nurse was generally regarded as unnecessary or even undesirable. At present directresses of training

schools in general hospitals are beginning to feel that their nurses' course is not complete unless a part of it is passed in a mental hospital where the student will receive an intensive course in psychiatric nursing. This is a hopeful indication, and if this idea develops into a practical program it may result in no small degree in solving the nursing problem in the mental hospital and may well prove of inestimable value in the general field of psychiatry.

I am strongly of the opinion that The American Psychiatric Association should not only approve the idea of affiliation in a mental hospital as a part of the nurses' training course in a general hospital, but if possible should take such action as might lead to such affiliations being required in the curriculum of every school of nursing. This would not mean that our own training schools should be done away with, but it would provide for supplementary and additional psychiatric nursing training that undoubtedly would be productive of excellent results for the whole community.

It is perhaps only natural that I should select for discussion certain aspects of the work of a state department with which I have been associated for a number of years, in its relation to a state hospital system and as to its further possibilities for service to the community. One cannot be closely associated with the work of a state department dealing with the problem of mental disease without recognizing that there is a constant effort being made to subordinate psychiatric ideals to a type of administration of our state hospitals dictated by a policy of strict economy. Of late years there has been a very definite trend towards centralized control of our state hospitals. Where the number of hospitals doing similar work has been sufficient, highly specialized departments have been organized, as in New York and Massachusetts. In many other states where centralized control does not exist, the subject has been discussed or is under consideration. However one may feel towards such control, it is well to recognize this trend and to realize that sooner or later, as the size of the problem warrants, it is fair to assume that there will follow some form of centralization. With this in mind every effort should be made to insure the efficiency of the hospital system under these new conditions. It is my belief, with the pendulum swinging as it is toward centralized control that this form of administration eventually will

follow in most states either as a separate department dealing with mental diseases and mental defect or as an institutional department where the number of institutions does not warrant a separate department. Properly organized and safeguarded, there are many advantages in centralized control. If such a department is to be responsible for the work of the state institutions, the control vested in it should be complete. In those states where centralized control is under legislative consideration, members of this Association will be of distinct service if it be insisted that at the head of a commission controlling a state hospital system there be a physician who is a psychiatrist with adequate training in hospital administration. In Massachusetts those concerned with framing the law creating the existing department wisely provided that not only the commissioner but also two of the four associate commissioners must be physicians and psychiatrists. Thus a majority of the commission are psychiatrists, thereby giving assurance that the medical needs of the hospital will be given first consideration. Under such a system there is little danger that the control of the state hospitals will fall into the hands of inexperienced politicians, and likewise little danger that there will be a lack of continuity in the policies of the department with changes in personnel. In this way, also, those interested in the maintenance of a high standard of administration of hospitals can be assured that policies are not formulated along lines of political expediency. Along with this tendency to create centralized commissions or boards of control of state hospitals there usually follows the establishment of central purchasing agencies with a general purchasing agent in charge. It is not conceded that such a purchasing agent can buy commodities more advantageously than the properly trained individual in any of our state hospitals, but here again theoretically the practice of central purchasing is accepted by the legislature as a procedure that should result in marked savings. Generally the establishment of a central purchasing bureau has been met with no little antagonism on the part of state hospital authorities. If, however, when the establishment of a central purchasing bureau is under consideration those interested insist on three factors being saved to the hospitals, no difficulties will be experienced after the adoption of the plan. In the first place, the hospital should be given prior right

to determine specifications for all commodities to be purchased; secondly, the determination of the quantities to be requisitioned; and thirdly, the right to reject on receipt of the goods if they are not in accordance with specifications. If provisions guaranteeing these conditions are incorporated in legislation creating a central purchasing bureau, hospital authorities only weaken their position by further objection. There is no good reason why the hospital should be interested in the details of actually placing an order or determining from whom goods should be purchased.

Probably very few state hospitals do not suffer at present from overcrowding in varying degrees. Quite apart from the influence of this condition upon the satisfactory administration of our hospitals, overcrowding is a basis of continued appeals to legislatures for relief. For a number of years efforts have been made to secure a new state hospital in Massachusetts. The request for this hospital had been submitted on the basis of a general condition of overcrowding in the existing state hospitals. Some years ago the State Board of Insanity (as the department was then known) determined upon a unit for certifying the capacity of our state hospitals, and these hospitals were painstakingly measured in accordance with this unit and the capacities determined. Obviously, the difference between the capacities of the state hospitals as thus determined and the actual number of patients under care represents the degree of overcrowding. The Department with which I have been connected was called upon a year ago by a legislative resolve to report upon the needs of our state hospitals for increased accommodations and specifically directed to compare conditions in Massachusetts with those in other states. The question of a unit to serve as a basis for certifying capacity of a hospital is a complex one and it is not proposed at this time to enter into a detailed discussion of the various phases of the question. Investigation was made as to existing standards in other states, with the startling discovery that in no state had a unit for certifying capacity of a hospital been adopted; furthermore, the procedure of determining capacity, where any thought had been given to this question, varied markedly. It was contended at the legislative hearings leading up to the resolve above referred to that the unit for certifying capacity in Massachusetts was far too liberal in

space allotment, and practically no support for the unit which had been in use could be gained from detailed information as to the practice in other states. The unit for certifying capacity in our state hospitals in Massachusetts has been modified slightly from that originally used and has now been accepted by other administrative departments of the state as well as the legislative committees as the basis on which future needs of the hospitals will not only be determined but upon which appropriations for new construction will be made. A statement of the unit may be of interest:

> Thirty square feet per patient in day rooms, 50 square feet in dormitories; with the exception that 100 square feet be used in rooms occupied by the newly admitted and acutely sick classes, by tubercular, adult epileptic or disturbed patients, by patients who are both noisy and untidy, and by patients suffering from acute physical disease, the 100 square feet to be either in rooms occupied both night and day, or 50 square feet in day rooms and 50 square feet in dormitories.

Investigation of this rather complex question to the end that a unit for certifying capacity of hospitals caring for the mentally sick and mentally defectives may be defined and the unit approved by this Association would be exceedingly effective and helpful. I am convinced that a state legislature would hesitate in questioning such a unit bearing the stamp of approval of this Association. Determination of the capacity of state hospitals in accordance with such an approved unit would permit those seeking to remedy conditions of overcrowding to present facts in such a manner as to make difficult opposition to relief by appropriating bodies.

The enormous cost of maintenance of our state hospitals in the care of the mentally sick, the increasing demand for extension of this service resulting from organized and unorganized propaganda and the increasing burden of taxation constitute a challenge to those in responsible positions to justify expenditures of such great magnitude. For some time I have been very definitely of the opinion that it would be necessary to meet this great issue by a careful analysis of the whole problem through methods of approach heretofore not made use of. Furthermore, I am of the belief that unless this issue is attacked by those qualified it is almost certain that the work will be done by those who are neither sympathetic to our problem nor in possession of the necessary background, with the resulting danger that business control will supersede medical con-

trol. The executive of a mental hospital is confronted with many questions regarding the details of medical administration in his relationship to various other agencies of state administration that he is unable to answer with satisfaction to himself without the necessity of inquiry that either requires an undue outlay of time on the one hand or is impossible of securing with the usual methods available to him. This aspect of the problem has always been of very great importance to me personally, and one for which a solution has been sought. It was only natural, therefore, that a search for methods in use by large business corporations, presumably in possession of detailed information regarding their business, available at a moment's notice, was made. After considerable study, such a method was found and modified in accordance with the needs of the work. Once this method was secured, a further delay was experienced in the installation of such a system, because of the initial cost. But again, there is so much at stake that the expenditure of a large sum is warranted if detailed information regarding our problem can be made available to us at almost a moment's notice. Through the efforts of this Association and the National Committee for Mental Hygiene there are in use in our mental hospitals uniform statistical tables utilizing a standard classification of mental diseases. In the modern mental hospital care has been exercised and every effort made to record accurately medical observations, and the age of these hospitals generally is such that there is in the medical records of each hospital a vast amount of information recorded which can be utilized for such a comprehensive and detailed analysis.

In brief, this method is a form of statistical approach which continues to make use of the statistical information required by the National Committee for Mental Hygiene in its standard uniform tables without any change in the nomenclature, together with additional data of collateral importance. It should be stated that this very large piece of work, of far-reaching scope, has been initiated primarily for administrative reasons, although fundamentally there will result in available form a fund of information that will be of extraordinary value.

In the installation of this new statistical machinery it has been necessary to utilize mechanical means because it is evident to all that to adequately analyze, tabulate, sort and count all the required

data by ordinary means would be beyond human possibility. The amount of energy required would be tremendous and the amount of time consumed would make it impossible. It is with this mechanical means plus the intelligent direction by a psychiatrist who has had adequate statistical training, that we hope to bring about the desired results. We find in our short experience with it that it is workable and that while in the beginning it requires a large corps of workers who must be trained to bring the system up to date, as soon as this preliminary training is completed, the entire work will be done more efficiently than in the past and with a smaller corps of people than now employed for the routine statistical work. Every superintendent knows how long a period of time it takes to get our statistical tables ready for publication, not to say published. With this new method it is hoped that we shall have these tables ready for publication within a very short time after the close of each statistical year. With this new method we can not only do this, but we can ask and have made available as many tables as we find desired or necessary at short notice. While it may be necessary or desirable only to continue publication of our present tables, the department will be able to have on file a great many more tables for its use than are published. In addition, if any interested person, for administrative or scientific purposes, desires information not published, the department can have this prepared at a few days' notice and copies photostated for distribution. Steps are under way for the application of this same statistical approach to details of administrative procedure, such as an analysis of personnel turnover as well as its control. The great purpose in mind is to take innumerable questions dealing with hospital administration out of the realm of guess-work and to make possible a scientific examination of the facts. Only by a knowledge of past experience, once in available form and known, can we hope to forecast adequately the future needs of our hospitals, to evaluate results and more intelligently formulate policies.

No state hospital system can adequately or conscientiously fulfill its duty without giving considerable thought to the question of research. Without the research spirit and without the development of adequate machinery for research, we can only make progress by intuition or by guess-work. The centralization of the state hos-

pitals is not only of great value to administration but is necessary to research in our field. The state is, indeed, the logical unit to undertake research of this sort. Especially in the older states, systems of vital statistics have been developed which we can utilize in our studies. Again, we have a larger amount of disease and disorder under observation, treatment and control in our state hospitals than we have in any other type of disease, whether mental or physical. Our vital statistics of to-day, excellent as they may be, concern themselves almost always, when they are reasonably adequate, to deaths, births, marriages and divorce. In the field of morbidity we find that the present-day statistics are in the main very inaccurate and almost valueless. The state hospital system has under observation and has under control probably the majority of the persons seriously ill with mental disease. The state hospital system well centralized, therefore, offers a wonderful opportunity to make studies of morbidity in the field of mental disease, which is far superior to any study of morbidity which to-day can be made in the other fields of medicine.

Every effort is now being made by intelligent state departments of health and by the United States Public Health Service to make fairly accurate studies of morbidity, feeling that in these studies lies the possibility of a very great advance in preventive medicine. It is desirable that funds be made available for a study of morbidity in the field of mental disease. With a well-centralized state hospital system as in Massachusetts, this is certainly not impossible and can be done economically. I hope that in the near future the Massachusetts Department of Mental Diseases will make, by a scientific study of morbidity, a very great contribution to psychiatry and mental hygiene by the development of the epidemiology of mental diseases. Epidemiology deals with the mass symptoms of disease rather than with the symptoms of the individual patient. In my opinion, an analysis of the mass data which a centralized state system economically makes available will result in scientific information of equal, if not greater, value as have studies of individual cases.

Many states are confronted at this time with the need of a program which calls either for new hospitals or additions to existing hospitals to meet overcrowded conditions. Most hospitals for the mentally sick in this country now care for numbers far in

excess of that originally planned for and as a result new buildings or additions have been added to existing plants, more often without the provision of service facilities to keep pace with the increased load. As a result, many of these hospitals are overcrowded and necessarily inefficient in their administration. In planning for a new state hospital it is therefore of great importance that all possible information, based upon past experience, be employed, as only in this way are we able to adequately meet the needs of the problem and avoid repeating the mistakes of our existing hospitals. Here again the vast amount of information that will be made available through this new statistical approach will be of inestimable value. At present, there are being cared for in the Massachusetts state hospital system (mentally ill, mentally defective and epileptic) approximately 23,000 patients, at a per capita expenditure of approximately $1.00 per day. The total cost of this is so great that unless we are resolved to face the prospect of a steadily increasing expenditure we are compelled to ascertain whether the present work is being done efficiently. There is, in other words, a very definite need of ascertaining whether the money appropriated is being expended to the best advantage and whether the traditional manner of carrying on the work of our hospitals is, after all, the most efficient. Necessarily the need of detailed information is of equal importance in the planning of a new hospital. Thus, definite information based on past experience regarding the release on visit and discharge of patients, their number, average length of hospital stay, etc., all of which markedly influence the size of units, has a bearing on hospital construction that cannot be longer ignored. The need in a state hospital system for measuring and comparing the results of care at different hospitals is a matter of great importance to the administrator. It is only on the basis of such measurement and comparison that an intelligent policy can be outlined. The time has come when we ought not to continue to do a thing simply because it is traditional or because we follow an impression with which most of us may have heretofore agreed, or that we should continue a policy because we are in a better position to guess than any other group. If the information obtained by a careful analysis of methods in use requires a wide departure from tradition it should be put into effect by ourselves before a demand is made from outside sources not so sympathetic.

The standing Committee on Standards and Policies of this Association has made a valuable contribution in the past in formulating minimum standards for mental hospitals. It is my opinion that this important work should be carried further and the necessary machinery established and funds secured to make possible the rating of mental hospitals along the lines suggested by this committee. It is believed that this Association should undertake such a grading of mental hospitals as has been carried on in the general hospital field by the American Medical Association and the American College of Surgeons. Such a project undoubtedly would call for a program extending over a number of years and for an appropriation not within the means of the Association. The importance of the work, its value in elevating standards and the possibilities of furthering mental hygiene programs generally are so great as to commend favorably the proposition to the great foundations which have helped to further similar work in other fields. Accordingly, I would urge serious consideration of this matter of mental hospital rating which should be carried on by qualified psychiatrists and under the auspices of this Association, to the end that the committee's proposals shall be approved at this session.

No greater or more costly public health problem exists than the one with which we are concerned. The opportunities for service are stupendous especially in the field of prevention. An analysis of the problem—a job analysis, if you will—at this time may not only reveal methods for doing our work more efficiently but permit of a larger rôle being played in the rapid progress psychiatry is now making.

THE SCIENTIST AND THE PSYCHIATRIST.*

By EDWIN B. WILSON, Ph. D.,
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When one of your distinguished confrères heard my title, The Scientist and Psychiatrist he queried: Scientist? Christian Scientist? He saw he had guessed wrong, but I am not sure that he may not have meant a serious suggestion to me. As a matter of fact I do not know why of all persons I should have been selected for the honor of making your Annual Address. It is true that I have had a more than ordinarily varied experience in applying logical and mathematical analysis to the raw and to the refined facts of mechanics, physics, economics, aeronautics, astronomy, of administrative problems and now of demography, but I have no experience with psychiatry, mental hygiene, psychoanalysis or any other field of especial concern to you except as a short contact with Dr. Kline and Dr. Campbell may have started me somewhat toward these directions. My presence here must be attributed to their hope and mine for the future usefulness to psychiatry of statistical methods, and whatever talents I may possess in their employ. To-night I shall talk chiefly of science and the scientist and let my audience represent psychiatry and the psychiatrist and determine in their own minds in what way and in how far we may some day advance together to our mutual advantage.

In the October (1926) number of *Mental Hygiene* (Vol. 10, No. 4) in an essay on psychoanalysis as a cultural factor, Otto Rank who appears to be a frequent contributor seems to uphold the thesis that psychoanalysis is of very wide cultural utility. He says that poets soon recognized in it an ally if not a competitor and tried to get from it as much as was compatible with their artistic purposes, but that the possibilities in this direction soon proved to be limited; that the hope of poets that analysis would

* Annual Address, delivered at the eighty-third annual meeting of The American Psychiatric Association, Cincinnati, Ohio, May 31, June 1, 2, 3, 1927.

open up to them greater possibilities for artistic creation has remained unfulfilled, but that nevertheless psychoanalysis has left its imprint on contemporary literature; whether for better or for worse, he does not seem to state. Contrary to the natural sympathy which he finds between poets and psychoanalysis, he seems to feel that between scientists and it there is antipathy, that we are so hostile and aloof that in spite of zealous endeavors and certain concessions on the part of psychoanalysts, psychoanalysis had not succeeded in influencing the natural and mental sciences to an extent commensurate with its scientific importance, but that the cultured public accepted the analytic point of view much earlier and more easily.

For an outsider like me it would be presumptuous to discuss what relation if any there is between psychoanalysis and psychiatry, but this much is evident, namely, that this ancient and distinguished Association long antedates the advent of psychoanalysis and is competent to deal with the matter professionally. As I have seen little in human history which could lead me to believe in panaceas of any kind and have seen much which has shown the temporary nature of extreme enthusiasms for new points of view, I suspect that, however interesting to the cultured public, however sympathetic to poets, however opposed by scientists, or however useful to psychiatrists, psychoanalysis like other subjects must in due time come to take in the general mass of human endeavor and of human understanding its proper place, humbled by the realization that as in poetry its possibilities are everywhere limited but more serviceable in its humility than in its present pride. Such is the way of life, so much is true in general; and as one long interested in science and in scientists I think I sometimes detect to-day in science a vanity, among scientists a spirit of propaganda and on the part of the general public an adoration, all of which coming after a long-continued quiet growth of science may be significant rather of a retardation than of an acceleration in the progress of really fundamental advance.

Now that we have the scientific beauty parlor, the scientific cuisine, the professors of the permanent wave and the shingle bob, the lady doctors of dietetics in the chain hotels, research in the science of national advertising, Ph. D.'s of commercial science,

learned societies for the scientific study of the humanities, and so on indefinitely; now that science is not taboo but token and nothing and nobody is decent if not ostentatiously draped with it, we may be getting into a state where we should have the ministrations of the psychoanalyst and the care of the psychiatrist if not the constraints of the older custodian of the insane; but it is not the padded cell nor the hot tub, we are already too soft, rather it is the cold bare stone wall, the ball and chain, that are needed, a confronting with the hard and stubborn facts of which real basic science is made and the opportunity for quiet detached reflection which makes the scientist. As there has been so much loose use of the words science and scientist it may be well to give consideration for a few moments to what these terms mean.

One might be tempted to define circularly a scientist as he who occupies himself with science and science as the occupation of the scientist. Such definitions get nowhere and moreover are not sharp enough to be true. Scientists occupy themselves with a great deal, even in their public utterances, which is not science. For example, during the past few months many of my scientific colleagues have concerned themselves with the Sacco-Vanzetti case and in not a few instances their reasoning has seemed to me deficient in scientific observation, content and attitude. This is a matter of human behavior rather than of science. Other of my scientific friends are preaching religion or going about moralizing, and possibly the religion and morals thus preached are less scientific as well as less profound than might be had of persons especially schooled in those fields; again it is a matter of behavior. You cannot prevent, you do not wish to prevent, a scientist from exercising his non-scientific human prerogatives, especially in a period when apparently everybody is expected to talk on every sort of occasion about every sort of subject—as witness the present occasion!

If we seek a definition of science we can do worse than go to Vilfredo Pareto, profound student of the economic and social sciences (Manuel d'Economie Politique and Traité de Sociologie Générale). He takes as scientific facts those facts which may be verified by observation and as scientific theories those logical arrangements of scientific facts which may be useful. That the sun rises is a verifiable fact of observation, a scientific fact. It

is however a raw or crude fact. One may say that the sun does not really rise but remains stationary; it is the turning of the earth upon its axis which makes the sun appear to rise. Is this a scientific fact, *i. e.*, a verifiable fact of observation, or it is a scientific theory or inference? Certainly it is not a raw fact of observation, it is at least somewhat refined, somewhat colored with inference. Probably there is nobody in this audience who would not admit it as a fact, although it cannot be observed so crudely as the rising of the sun. How about the rising of the sun upon a cloudy day? Is that less a scientific fact than if the day be clear? In this case all would admit that the fact could be observed if only we should ascend, in a balloon or airplane, above the clouds. Such observations have in fact been made. The rising of the sun upon a cloudy day is an observable fact. Can we then observe the turning of the earth upon its axis? Certainly not so directly, but with the aid of Foucault's pendulum and by means of experiments with refined forms of the spinning top or gyroscope we can and do verify that the pendulum or the gyroscope behave as though the earth were turning on its axis, and so convincing is the demonstration and so well does the rotation of the earth fit in with a great body of facts of observation, that most of us will include that rotation among the facts themselves rather than among the theories or inferences. There is no harm in so doing. The line between fact and inference cannot, I think, be drawn as a perfect dichotomy; from the crudest facts, though refined facts, to well established theories and beyond to mere speculation is a continuous, a gradual sequence. This, however, we can say, namely, that as we make the transition from raw fact to speculation we are diminishing our reliance upon real facts and increasing our reliance upon inference, and that every sound scientist must instinctively feel the difference here involved.

Is the immortality of the soul a scientific fact? Most persons seem to have believed in the immortality of the soul. The consensus in favor of it is nearly as great as in respect to the rising of the sun and much greater than relative to the rotation of the earth. By the definition, however, of scientific facts it is not consensus alone or mainly but verification through observation that is the criterion of scientific fact. How verify immortality by observation? How even locate the soul through observation? Thus

far we have been able to make little or no progress in answer to these questions. That does not mean that we never shall make progress, but it does mean that at present the matter of the soul is not one of science. Had someone a hundred years ago told us of radio he might have been right but as none at that time had the appropriate means of observation or of the experimental verification of radio, the tale would have had to be classed rather as romance or belief than as science. And such is much of the "science" of the ancient world and of the Middle Ages. Indeed such is still much of our "science" to-day. It is not only in his excursions into law or religion or morals that the scientist may cease to be scientific; he can do so quite well in his own field, he may get away from real verifiable facts of observation and run into phantasy. We cannot class as science every latest schizophrenic episode of the scientist. It may become science in the future, but is not science yet.

Let us examine a little more carefully our definition of science as a body of verifiable facts of observation and of logical inferences therefrom. That the sun rises is a non-quantitative fact; that it rises on some particular morning at 4.30 is a quantitative fact. That the distance from Boston to Chicago is 1000 miles is also a quantitative fact. But is such a fact verifiable? Certainly not exactly. The distance between two cities depends on how it is measured, by one route it is one thing, by another it is different. Scientifically speaking that distance can be affirmed as so and so much only within the limits within which competent authorities do actually agree. This is because verification is an essential part of the definition of scientific fact and verification means a consensus which can be had only if some amount of latitude is allowed to the observers. We all know that tolerances are admitted in minting coins or in filling cans with corned beef or in other practical affairs of measurement. Such procedure is scientific, and is indeed one of the essential elements of science. Many a dispute as to what some special quantity is can be resolved by having in mind that it is only such as it is agreed to be and that the difference between the estimates does not in fact exceed the tolerance implied by the looseness of definitions or the inevitable inaccuracies of the methods of measurements.

Suppose there be given 100 psychiatric cases which one psychiatrist diagnoses as 60 schizophrenics and 40 manic depressives, but another, equally competent, classifies as 65 schizophrenics and 35 manic depressives. We have here two scientific facts which can be verified from the record, namely, (1) that one psychiatrist has said 60 schizophrenics, 40 manics and (2) that another has said 65 schizophrenics and 35 manics; but we have no single scientific fact concerning the real number of either. If these two diagnosticians belong to widely different schools of thought it may well be that we shall have a very good estimate of the number of cases of each sort by taking the means and allowing a tolerance equal to that observed, that is, $62\frac{1}{2} \pm 2\frac{1}{2}$ schizophrenics and $37\frac{1}{2} \mp 2\frac{1}{2}$ manics. If however the two diagnosticians belong to essentially similar schools, and if it should happen, as is sometimes the case, though perhaps not in this instance, that there were others who belonged to different schools and would find decidedly different numbers of the two types, then it may well be that we know very little indeed about the real values of those numbers and the real tolerances which must be allowed in the classification of these 100 patients.

The point to be emphasized is that there is scientific fact independent of the observer only in so far as there is consensus among the observers. Indeed the first scientific step in any investigation is to determine in how far there is consensus, and a nearby step is to improve definitions and the technique of measuring or classifying so that there shall be closer agreement. In like manner there is general scientific fact relative to a single observer only in so far as he is consistent with himself in repeated observations upon the same material. We have in many if not in most instances three kinds of variability, (1) that of a single observer repeating his results on given material, (2) that of different observers working on the same material, and (3) that of the material itself, for nothing remains absolutely unchanged. In the happy easy cases, such as finding the length and breadth of a rectangular field, all these varieties of variation may be negligibly small, the total tolerance may not sensibly affect any conclusions that are desired; but such is certainly not true in many other cases, especially in new and imperfect fields of inquiry, in those in which the crude facts

themselves depend largely upon the judgment of the observer, and in all in which we have to strain to the limit our methods of measurement if we are to obtain any result at all.

An illustration of this last case may be had from astronomy. One of the most important things that we desire to know about a star is its distance, and these celestial distances like those terrestrial are found for the nearer stars by a sort of triangulation or method of surveying, yet even the nearer stars are so far away that in making the survey we have to measure a very small angle such as that subtended at our eye by a foot rule anywhere from a mile to more than a hundred miles away from us, and quite invisible to the unaided sight. With the utmost care in the measurement, we must expect a normal or median error of determination of that angle of the magnitude of the angle which would be subtended at the eye by a footrule 60 or 70 miles away. It is of course the real distances of the stars, not the distances as determined and including their errors of measurement that interest us. We do not know the individual errors made in each case; if we did we should correct for them. For many purposes however we may treat groups of stars. Do the errors balance out? They do not. In the figure (Fig. 1) we have the distribution in parallax (which is an angle from which the distance may readily be determined) of 313 stars; the lower and broader curve represents the distribution of the measured parallaxes, the taller and sharper curve that of the presumably true parallaxes after allowance for the errors of measurement. In the lower curve the greatest frequency or mode falls at about 0.0076″ corresponding to a distance of 440 light-years, whereas in the taller curve it falls at about 0.0101″ corresponding to a distance of 330 light-years which is about 25 per cent smaller. It thus makes a great difference whether we allow for errors or not.

Consider a purely hypothetical example from psychiatric diagnosis. Suppose we have a large number N of patients of whom P are schizophrenic and Q are manic depressive. Let us assume that these are the true numbers that we should like to find. Let us for the illustration waive the question as to whether the classification is strictly dichotomous, whether with infinite wisdom we could so define and distinguish schizophrenic and manic depressive

as to make a strictly determinate classification. Let it also be admitted that the human limitations of our diagnostician are such that of the P true schizophrenics he will classify a fraction f or a number fP as manic depressives and that of the Q true manic

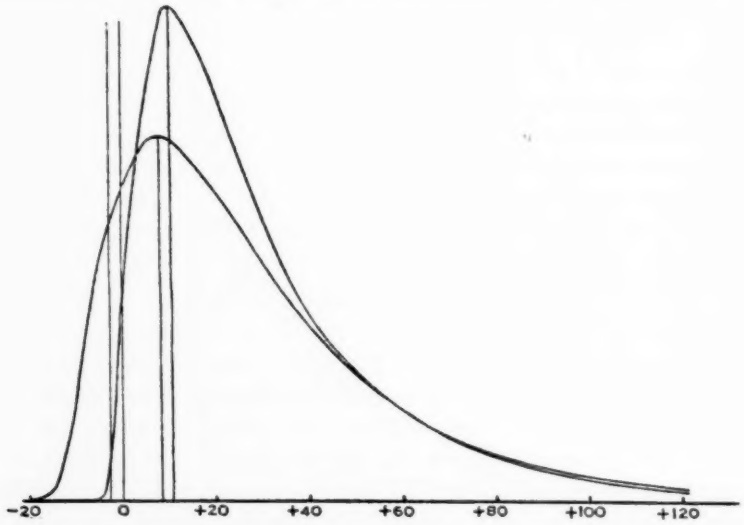

FIG. 1.—Frequency curves for the distribution of stellar parallaxes of 313 stars. The lower and broader curve represents the distribution of the parallaxes as measured, with a mode or maximum frequency at about 7.6 (the scale reads thousands of a second of arc); the narrower and higher curve gives the distribution as corrected for errors of measurement, with a mode at about 10.1. Note the great excess of true parallaxes between about 3.5 and about 60, and the greatly diminished number of parallaxes less than 3.5 in the corrected as compared with the observed curve. (Taken from a paper by E. B. Wilson and W. J. Luyten, *Proceedings of the National Academy of Sciences*, Vol. II, No. 5, May, 1925, pp. 270-274.)

depressives he will classify a fraction g or a number gQ as schizophrenics. He will then find

$$P' = P - fP + gQ \text{ schizophrenics.}$$
$$Q' = Q - gQ + fP \text{ manic depressives.}$$

Under what conditions will he find the true numbers despite his errors of diagnosis? We must have

$$P' = P \text{ or } P = P - fP + gQ.$$

This means $fP = gQ$, which is an obvious result, namely, that he must mistake the same number fP of schizophrenics for manic

depressives as the number gQ of manic depressives that he mistakes for schizophrenics.

But is he likely to strike just this balance? Most assuredly not. We do not need to know anything about chance or probability or statistics to reach this negative conclusion, only plain common sense. In most cases like this our errors of classification are relative; if out of 100 schizophrenics we classify 10 as manic depressive, then of 200 similar patients we should classify 20 erroneously. It is thus reasonable to infer that the fractional errors f and g are more or less definite quantities fixed or constant for a given diagnostician relative to similar groups of patients, but perhaps or probably varying more or less from one diagnostician to another, or from one school of diagnosticians to another school. Under such a reasonable assumption the numbers fP and gQ will be equal only when $f:g = Q:P$, *i. e.*, only when the number of patients truly in the two categories is inversely proportional to the percentage errors of misclassification. Still assuming the constancy of f and g as percentage errors we may say that if the true number P of schizophrenics exceeds the fraction $\frac{g}{f+g}$ $\frac{1}{1+f/g}$, of all patients, *i. e.*, if $P > \frac{gN}{f+g}$, then we shall underestimate the schizophrenics and overestimate the manic depressives, but if it is less we shall overestimate the schizophrenics and underestimate the manic depressives.

This sort of example of thinking about the fundamental problem of classification is not a proper matter for a lecture of this sort, it is more appropriate for study at home (the results are summarized in Fig. 2). I do not wish to emphasize the detail; the hypotheses made may be so wild that the detail is insignificant if not ludicrous. But we must emphasize the principle which is this: When the observer is liable to errors of judgment his classification is liable to be in error, and further if the observer is liable to such errors, the only way to obtain the true proportions is to study the magnitude of those errors. It should go without saying that we do not by this study get so far as to reclassify the individual patients correctly, we may only determine the correct proportions, but for some purposes it is merely these proportions that we need.

The practical problem is in a way the inverse of the hypothetical; it is the observed numbers P' and Q' as classified that are known and it is the true numbers P,Q that are desired. The reasoning is similar but not quite so direct; indeed this is typically a problem for school algebra, as the easiest way to solve it seems to be to set up the equations as above and solve them to get

$$P = \frac{(1-g)P' - gQ'}{1-f-g}, \qquad Q = \frac{(1-f)Q' - fP'}{1-f-g}.$$

The problem of science is to get at the real facts. We must get at them the best we can. We may need arithmetic or algebra or

	Schizophrenics	Manic depressives
True number	P	Q
Lost cases	$-fP$	$-gQ$
Cases gained	gQ	fF
Observed number	$F-fP+gQ=P'$	$Q-gQ+fP=Q'$
Gains = loses if	$fP=gQ$ or $P:Q=g:f$.	
Manic depressives in excess if	$P/Q>g/f$.	
Schizophrenics in excess if	$F/Q<g/f$,	

True number in terms of observed number:

$$P=\frac{(1-g)P'-gQ'}{1-f-g}, \qquad Q=\frac{(1-f)Q'-fP'}{1-f-g}$$

FIG. 2.—Summary.

even some probability and statistics, but we surely need logic and the patience carefully to discriminate facts relative jointly to the experimental material and the observer from facts relative to the material but independent of the observer. Indeed science universally posits a naive realism; it assumes that there are realities external to the observer and that it is those realities which are the real object of scientific study. It is this which is implied by speaking of scientific facts as verifiable by observation; if observers somewhat differ as to the facts about the same material those facts are just so far unverifiable and to that extent are not scientific. So far as may be practically necessary we have to eliminate our errors or differences before we have science. To this end it is almost universally customary to take as the basis of classifica-

tions characteristics subject to the least possible mistake or confusion. In clinical medicine and in psychiatry it appears often to be very difficult to find definite obvious symptoms or indicia of the condition of the patient upon which all diagnosticians would agree and which may be adequate as a basis for diagnostic classification; but we may feel encouragement in the improvements that are constantly appearing in the various aids to diagnosis. The effort must always be and indeed always is toward the elimination of interpretations of the observer and the introduction of facts independent of him; it is our material not ourselves that we wish to study, although this does not preclude the inclusion of ourselves as part of that material and even necessitates that inclusion as a preliminary step to its exclusion.

Let us turn now for a few moments to statistics. Many of you may have a poor opinion of statistics, so do I, so did Claude Bernard, the founder of physiology. I will quote from him (Experimental Medicine, translation by H. C. Greene, Macmillan, pp. 136-139): "I acknowledge my inability to understand why results taken from statistics are called *laws;* for in my opinion scientific law can be based only on certainty, on absolute determination, not on probability. . . . . In every science we must recognize two classes of phenomena, first, those whose cause is clearly defined; next, those whose cause is still undefined. With phenomena whose cause is already defined, statistics have nothing to do; they would even be absurd. . . . . The results of statistics . . . . seem to show that some compensation in the variations of phenomena leads to a law; but as this compensation is indefinite . . . . it can never teach us anything about a particular case. . . . . Statistics can therefore bring to birth only conjectural sciences; they can never produce active experimental sciences, *i. e.,* sciences which regulate phenomena according to definite laws. By statistics, we get a conjecture of greater or less probability about any given case, but never any certainty, never absolute determinism. . . . . All sciences necessarily begin by being conjectural; even to-day science has its conjectural parts. Medicine is still almost wholly conjectural. I do not deny it; I only mean to say that modern medical science must exert itself to get out of the temporary condition which is no more a final scientific state for medicine than for any other science." Claude Bernard was writing

this long before the recent development of statistics, to-day he might modify somewhat his phrases if not his opinion, but in the main he would I think cleave to his chief contention that statistics could at most lead to suggestions or conjectures with respect to causes which must then be followed up by other methods.

We may agree with him. Perhaps everything begins with statistics. Our observations of and adjustments to our environment are varied; we do not immediately become scientists, that is a late stage, at first we classify as best we can in some sort of conscious or more frequently unconscious way the engrams we receive through living; protoplasmically we are statisticians, we become conjectural, and finally may attain to some scientific knowledge. How difficult it is to become scientific may be estimated by comparing the amount of science which any one of us gets from learning it all ready-made with that which as individuals we discover for ourselves. Even to become conjectural is not entirely easy, we are fundamentally chiefly statisticians—and rather inaccurate ones at that. The advance which comes through systematic critical compilation of facts, generally recognized as statistics, inheres primarily in the greater accuracy and universality and definiteness of the facts as compared with mere engrammic impressions, with the consequent improvements in the rapidity, number, and probable soundness of conjectures, and thus the faster transition to finding true scientific knowledge. It is not the process through statistics which Claude Bernard condemns, but satisfaction in it which may lead to the arrest of progress there with no stimulus to exertion to get still farther on the scientific path toward the goal of science itself. Ill would we brook a meteorology which gave us only statistics; we want to know to-morrow's weather. To change from a symptom-complex to a specific etiological factor as in general paresis represents scientific progress; the factor might be suggested through statistics, but the proof of it would require assistance from other sources.

If psychiatry to-day is largely a science with its causes known, if it is already determinate in the sense of Claude Bernard, it will have little use for statistics; if it is still chiefly conjectural it can progress better through a more general and accurate compilation and analysis of its statistical material; if it has not yet ad-

vanced far into the conjectural stage, it can only pass further into that stage by becoming more consciously and more conscientiously statistical. It is said that in this country there are about as many hospital beds for mental cases as for all other maladies combined. With proper agreements among yourselves in respect to manner of tabulation your cases should furnish a wealth of material on which to study classification and the variousness of classifiers in the hope that you might come to improve your definitions and to increase your consensus. That is the first step in science; dispassionately to study one's own limitations that he may measure his strength for his real task. With sound and comparable classification you may then go on to the study of the association of two conditions, each with the other, which though often leading nowhere, yet sometimes points to the most fruitful conjectures. Your material is extensive, it is under long and careful control; with constantly improving standards you are ever becoming prepared to get more and more out of it; you have practically a monopoly of the material such as no group of physicians has of the material in other disorders, so far as statistics may go you have all the advantages over them; you are not neglecting, you will not neglect your opportunities to make these advantages effective for the advance of medical science.

But there is more than medical science that must concern us. Your problem is societal. The so-called social sciences are misnamed. We have little information about society which is worthy of the name of science. The facts about society are too often not verifiable, too rarely agreed upon to be called scientific. Yet with transportation rapid and the transmission of intelligence even faster we can to-day knit into a single society, throbbing to the same daily news, vast throngs of widely separated persons as they could never have been knit before. Under such conditions public health means more than the abatement of local nuisance and the psychiatrist is no more the keeper of the village pound who has added to his other stray creatures the local half-wit. There is vast organization of curative and of preventive medicine in the physical and in the mental fields. It is through statistics that the individual keeps track of such social organizations and with their aid that he analyses and improves them, primarily not so much for the prog-

ress of scientific as for the furtherance of human interests. But those interests are not antagonistic, they are cooperative. The very human desire to understand advances science as such, and science in the physical field has much advanced our control over nature, our tools, and our comforts until the luxuries of one generation become the necessities of the next. The desire to understand is as urgent in the mental and social fields as in the physical, but is relatively less potent on account of the greater complexities of the higher type of organization; better minds, better trained and more patient, are required. Who can doubt that, when the science of mind and of society has made more progress, it in its turn will contribute largely to our relief in better adjustment to nature, to our own natures and to those of our fellowmen both individually and in the mass? The founder of a great school of quantitative psychology in America, J. McKeen Cattell, in his presidential address before the American Association for the Advancement of Science a year and a half ago (*Science,* Jan. 1 and 8, 1926) ventured the estimate that: If each of us from the moron to the federal president were selected for the work that he can do best, the work fitted in the best way to the individual and the best training given to him, the productivity of the nation would be more than doubled and the happiness of each would be correspondingly increased. In the development of the science of society and in the realization of the benefits from its application, our oldest national medical society, The American Psychiatric Association, is marked by its past performances to play an ever-enlarging part, and to play it always better for the increasing good of all.

PSYCHIATRIC ETYMOLOGY.

By HENRY A. BUNKER, JR., M. D.

Unless ye utter by the tongue speech easy to be understood, how shall it be known what is spoken?—I. Corinthians 14:9.

Every one acquainted with German has undoubtedly noticed the reliance of that language upon its native stock of words for the formation of many of its scientific terms—to an extent, indeed, that seems almost naive, at times, to the English-speaking person. When we speak of *proteins,* the German says *Eiweisskörper; oxygen* and *hydrogen* are *Sauerstoff* and *Wasserstoff; vertebrate* and *mammal* are *Wirbeltier* and *Säugetier;* where we refer to *obstetrics* or *pediatrics* or *anoxemia* or *dementia præcox,* the German uses (or may use) *Geburtshilfe, Kinderheilkunde, Sauerstoffverarmung, Jugendirresein*—to name but a few out of dozens of possible examples. To a German the meaning of these German words is self-evident and does not have to be separately acquired, for they represent but an extension of a vocabulary already long in his possession. For us, on the other hand, it is far otherwise: either we must consciously acquire such terms, adding them to our vocabulary as the result of a deliberate and none too painless act of learning; or we must already be in possession of a classical equipment, rather rare in these United States, such as will render more or less immediately apparent from the sense of their constituent elements the meaning of these borrowings and adaptations from the Latin and Greek. Indeed, scarcely a year passes, one might almost say, that some voice is not raised in protest, either specifically against the Hellenism (and consequent unintelligibility to the layman) of the scientific or professional terminology which we affect, or in a more general sense against that unparallelled hospitality toward strangers which has made the English language a *pot-pourri* of half a dozen foreign tongues; and some have even conceived it to be their mission—a harmless form of paraphrenia—to reform our speech fundamentally by seeking to purge it of its foreign devils. Only the other day there appeared in a certain intellectual

organ published weekly in Philadelphia an indictment of the bright lexicon of medicine, to the effect that "the doctors alone [as compared with ministers and lawyers!] are the bond-slaves of a vocabulary drawn from the dead languages." And for the prototype of this complaint, with regard to our English speech in general, we may remain in the present century with Allen Upward's *The New Word,* which some of my readers may remember, or as easily go back to 1557, when Sir John Cheeke wrote: ". . . . yet let her borow with such bashfulnes, that it mai appeer that, if either the mould of our own tung could serve us to fascion a woord of our own, or if the old denisoned wordes could content and ease this neede, we wold not boldly venture of unknowen wordes"—or to 1603, when another with some acerbity complained that "Since the tyme of Chaucer, more Latin & French hath bin mingled with our toung than left out of it; but of late, wee have falne to such borowing of woords from Latin, French, and other toungs, that it had bin beyond all stay and limit." Of this hospitality toward foreign sources, Professor Jespersen gives a rather astonishing example: "To express the idea of a small book that is always ready at hand . . . . what could be more natural than for the Anglo-Saxons to frame according to the genius of their own language the compound *handboc?* . . . . Similar compounds were used, and are used, as a matter of course, in the other cognate languages—German *Handbuch,* Danish *håndbog,* etc. But in the Middle English period, *handboc* was disused, the French (Latin) *manual* taking its place, and in the sixteenth century the Greek word *enchiridion* was introduced into the English language. And so accustomed had the nation grown to preferring strange and exotic words that when in the nineteenth century *handbook* made its reappearance it was treated as an unwelcome intruder" such that "reviewers [of *A Hand-Book for Travellers*] as late as 1843 apologized for copying this coined word."

The fact is, that the history of the English language is one long history of borrowing from other languages, from the Danish down. And we may regard as only a special instance of this general propensity our inveterate custom of going to the classical tongues, instead of to our own vocabulary, for words to express new objects and new conceptions, especially in the service of science. Seeing, however, that it would appear rather the natural thing for a

language to utilize its own resources before drawing upon other languages (as indeed German does to a large extent, and Greek did to an unparallelled degree), it becomes pertinent, and is perhaps not wholly unintelligent, to ask how we got that way.[1]

It is true that English has occupied a rather unusual position with respect to certain of the languages from which its importations have been large. For though it may be a fact that the sons of Britain never will be slaves, this has been more obvious since 1066 A. D. than before. With the first, the Danish, conquest of Anglo-Saxon England in the eighth and ninth centuries, there began to be erected the first of the three superstructures that were to be built on the Anglo-Saxon foundation. From the more than usually intimate fusion that eventually took place between the two peoples ("they fought like brothers and afterwards settled down, like brothers, side by side") there resulted an intimate intermingling of the English and Scandinavian languages[2]—an intermingling which might have been much less complete, says Jespersen, had not the numbers of the Danish and Norwegian settlers been considerable, and had not the two languages had a certain similarity to each other to begin with. This linguistic fusion was further favored by the fact that the civilization of the invaders was not of a higher order than that of the English, else among the loan-words would have been special groups of technical terms indicative of

[1] The more so, since English apparently once possessed this "normalcy," for when England was christianized (about 600 A. D.) its people were entirely able to frame words out of the existing speech-material to express the foreign ideas which that religion brought to them. To name but one example of this (which I owe with so much else to Professor Jespersen), Anglo-Saxons had *gōd-spell* (later *godspell*), together with *gospellere*, as a direct translation of the Greek εὐαγγέλιον; and there were many other examples of more or less similar nature. (Note that while we have retained the former word as *gospel*, for the latter we have reverted to the Greek and now say *evangelist*).

[2] In some cases, indeed, we have retained both the English and the Norse forms of the same word, usually with the development of some difference in meaning, as *shirt* (English) and *skirt* (Norse), *shriek* and *screech*, *no* and *nay;* or have kept the native word, when different, with a specialized meaning, as *die* (Norse) but *starve* (AS *steorfan*), cognate with the German *sterben*. In other cases we have discarded the English word, so that we say *throw*, for example, instead of using a modern form of *weorfan* which would be cognate with the German *werfen*.

this superiority, as is scarcely at all the case; nor could it have been much inferior to that of the English, for in that event the Danes would have adopted the language of the natives without appreciably influencing it (as happened with the Franks in France and with the Danes in Normandy, where the Germanic tongues were absorbed into the Romance languages).

After the battle of Hastings (1066), the Normans, who much more than the Danes were felt to be an alien race, became the ruling caste; and this difference in social status seems to have been the means of introducing into the English speech words political and administrative, military, ecclesiastical and legal, as well as terms pertaining to *cuisine* (for some of us the first few pages of *Ivanhoe* were our first lesson in English philology), to dress and fashion, to the arts, and to the amenities of life in general. So far at least as non-technical words were concerned, it appears to have become the fashion of many of the English of that day to imitate their "betters," to employ French words as a mark of refinement; and Jespersen has been at pains to show, with an implication of the voluntary character of this assimilation, that nearly half the Norman words adopted were taken into English between 1250 and 1400 (only 2 per cent before 1200), beginning thus two hundred years after the Conquest. The process was further assisted by the habit which developed among writers of using a French word side by side with its native synonym, as in the *Ancrene Riwle* (about 1225): "in *desperaunce*, thet is, in *unhope; ignoraunce*, thet is *unwisdom* & *unwitnesse*"; a process carried further, but for a purely stylistic purpose, by Chaucer and by Caxton, whose readers, says Jespersen, were evidently supposed to be equally familiar with both words. What is certain, at all events, is that nearly all the words borrowed from the French prior to 1350, and many of those adopted since that date, have become so much part and parcel of our speech that they appear to us just as English as the pre-Conquest stock of native words (including the Danish).

Of most importance in our present connection, there remains to mention that pervasive influence upon the English language whereby many words of French borrowing became remodelled after the Latin,[3] Latin syntax came even, at least in the written

[3] For example, *perfet* into *perfect*, *verdit* into *verdict*, *avis* and *aventure* into *advice* and *adventure*, *dette* and *doute* into *debt* and *doubt*.

language, to modify English syntax,[4] and in particular large numbers of Latin and also Greek words were taken into the vocabulary. In Jespersen's words, "the great historical event, without which this influence would never have assumed such gigantic dimensions, was the Revival of Learning. Through Italy and France the Renaissance came to be felt in England as early as the fourteenth century, and since then the invasion of classical terms has never stopped, although the multitude of new words introduced was greater, perhaps, in the fourteenth, the sixteenth and the nineteenth than in the intervening centuries." Thus, when the classical influx of words began, it had its *raison d'être* in the new world of old but forgotten ideas, then first revealed to medieval Europe. But as classicism became outgrown and new ideas, especially in relation to modern science, developed and demanded linguistic expression, "the curious thing happened that classical studies had so leavened the minds of the educated classes that even when they passed the bounds of the ancient world they drew upon the Latin and Greek vocabulary in preference to their own native stock of words."

But how is it that English proved more susceptible to the virus of revived classicism than did any other language except, perhaps, French? Certainly it cannot be that its exposure, so to speak, was greater, or that there was a more abundant zeal for the renascent learning on the part of the English than on the part of other nations. Jespersen suggests that it is rather that the natural power of resistance possessed by a Germanic tongue against alien intruders had already been broken down in the case of the English language by the wholesale importation of French words: "they paved the way for the Latin words which resembled them in so many respects, and they had already created in English minds that predilection for foreign words which made them shrink from consciously coining new words out of native materials." Perhaps this is as far as the explanation can be carried. Sapir has made the additional suggestion that English has long been striving for the completely unified, unanalyzed word; for this reason, such words as *credible,*

[4] As in such constructions as *that being the case* and *everything considered;* and in the disapproval of the omission of the relative pronoun (*The man I saw*), and of the ending of a sentence with a preposition.

certitude, intangible are entirely welcome in English because each represents a unitary idea, each is a fairly simple psychological entity, and "their formal analysis (*cred-ible, cert-i-tude, tang-ible*) is not a necessary act of the unconscious mind"—and indeed could not be, since *cred-, cert-, tang, -ible, -tude* have no real existence in English. (But the *fright* of *frightfulness* is an actual word in itself, and while *-ful* and *-ness* are not independently significant elements, as are the components of, say, *eyeball* and *wishbone*, they are significant in that they do convey a definite meaning.) On the other hand, "in German," says Sapir, "polysyllabic words strive to analyze themselves into significant elements; hence German has generally found it easier to create new words out of its own resources, as the necessity for them arose."[5]

Apparently English is ambivalent in its attitude. It has some tendency, an inheritance from its Germanic ancestry, to words which automatically fall into significant syllables (*birthday, jaw-bone, cod-liver*). But it also has the opposite and perhaps more active tendency towards unanalyzed words which represent a unitary idea (*cf.* the resistance to *handbook*); and whether this is a product of centuries of French influence, as Jespersen implies, or whether it is what helped to make the vast borrowings from the French, and later from the Latin, psychologically possible—which is cause and which effect, I do not know. At all events, the latter trend seems to be uppermost in at least the written language; and however that trend may have come into being, we continue to look to Latin and to Greek for words to meet new needs (especially when these needs are "learned" ones), not only because of the

[5] Sapir cites an interesting analogy, whereby Cambodgian and Tibetan appear to have much the same relation to Sanskrit as English and German to Latin. Cambodgian, like English, contains many polysyllabic words whose etymological analysis (*cred-ible, in-tang-ible*) is not felt as a compulsion by the speaker. "Like English, therefore, in its relation to French and Latin, it welcomed immense numbers of Sanskrit loan-words, toward which it felt no psychological resistance." Tibetan, on the other hand, was highly resistant to the polysyllabic words of Sanskrit—and this in spite of the influence of Buddhism and Buddhist literature, for Tibet is a stronghold of Buddhism—"because these words could not automatically fall into significant syllables, as they should have done in order to satisfy the Tibetan feeling for form. Tibetan was therefore driven to translating the great majority of these Sanskrit words into native equivalents."

leavening influence first of the Norman Conquest and then of the Renaissance, but because in those two ancient languages we find words ready to hand or else easily formed into a psychological entity (*anoxemia, polydactylism*), while in this way we are also able to avoid the combining of words already in our vocabulary (as though we should have to say *manyfingeredness*) in a manner which has somehow come to correspond less fully to the psychology of the English tongue.

Such words formed on classical roots are not always intelligible *per se,* since from an English standpoint they are often as unitary as *house* or *cat;* indeed, Jespersen has suggested that they are not always understood even by the erudite themselves—as when Goldsmith's *gestic* is taken by dictionaries as meaning "legendary," as if from the Old French *geste,* story, romance, whereas it means "pertaining to dancing" from the Latin *gestus,* gesture, or when *aristarchy* is taken in a literal sense, though it really alludes to one *Aristarch,* a critic. But though there be in psychiatry no words so recondite as these, it may be of some slight interest to inspect the Greek and Latin elements of which some of the terms commonly employed in a psychiatric connection are made up. When this is done, although many of these words are without any particular attraction, some will be found to possess a more or less interesting history, preserving within themselves, like the proverbial fly in amber, some little comment on the beliefs of former days. It is only our misfortune that psychiatry cannot compare with anatomy in this respect, since it possesses scarcely any expressions as picturesque or fanciful as *pia mater, crista galli,* or *torcular Herophili,* for example—still less such a curious term as *sacrum,* whose name, *sacred,* embodies the Rabbinical superstition, so it is said, that this particular structure was not subject to decomposition after death. But perhaps in such words as *hysteria, hypochondria,* and *melancholia,* though insufficiency of knowledge has compelled me to treat them superficially enough, may be found some slight redressing of the balance.[6]

[6] I would not overestimate the value of etymology, even in some such special connection as the present one; it does not, as has sometimes been claimed, determine the true significance of a word (ἔτυμος true), nor, in general, tell us so much what *is* true about an expression as what *has been* true. It may be the more regrettable that the scope of the rather casual

AFFECT.—Adaptation of the Latin *affectu-s,* noun of completed action, formed on *affic-ĕre* to act upon. In the sense of "mental state, mood, feeling" the word is found in English as early as the fourteenth century. It may not be irrelevant (in view of the capacity of words to obscure thought or conceal its absence) to remind the reader of Bleuler's division of the meanings of the word *feeling* into (1) a large number of centripetal processes, sensations, perceptions (feelings of warmth, bodily feelings); (2) intracentral perceptive processes, such as refer to occurrences outside the body (feelings of certainty, of probability) or to internal conditions (feelings of sadness); (3) indefinite or unclear cognitions (feelings of suspicion); (4) the feeling of pleasure and displeasure (*Unlust*), to which we must add the affects, affectivity. The first three are intellectual processes which are entirely different from affectivity; and, moreover, these "feelings" are "all comparatively irrelevant to the mind so long as no affect is associated with them—as soon as an affect is added, it immediately dominates the whole mind." An affect is a generalized reaction, "connected not only with cognition but even more closely with volition"; and "affectivity is the determining element in our acts and omissions," directing our attention as well as our whole behavior, and determining the direction of our endeavors (while "logic, judgment, seems on careful examination to be only the servant that shows the way to the goal and furnishes the necessary apparatus"). In MacCurdy's phraseology, a (complete) *emotion* is a combination of (subjective) *affect* and (objective) *emotional expression* (gestures, postures, facial movements, vocal expressions and modulations, and many visceral changes); *affect* is the most central and vital element in an emotion, "infinitely and eternally subjective," the *feeling-tone* that accompanies the emotion.

AMBIVALENCY.—Latin *amb(i)* both, on both sides, about, around+*valentia* vigor, capacity; formed on *valēre* to be well or strong (whence our *valedictory*). *Ambi* is familiar in such words

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notations which I here present does not permit an account of the adoption of certain terms in the nomenclature of psychiatry and their subsequent history (development and modification) within that field. For this much more attractive and valuable aspect of the subject, those who are interested will turn gratefully to the *Psychiatric Dictionary* which my colleague, Dr. Bertram D. Lewin, has at present in preparation.

as *ambidextrous;* less obviously it enters into *ambition,* which means literally "a going about." *Valency* has lost in English the original Latin meaning which it once possessed, acquiring its present signification in physics and chemistry in the nineteenth century. *Ambivalency* in its present psychiatric sense was first used by Bleuler.

AMNESIA.—Modern Latin, adopted from the Greek ἀμνησία forgetfulness. We find the Greek root in our *mnemonic,* an aid to memory. As an English word, *amnesia* is said first to have been used in 1878 by Hamilton in his *Nervous Diseases.*

ANXIETY.—Adaptation of the Latin *anxietāt-em,* a noun of quality formed on *anxi-us* troubled in mind, which is in turn formed on *ang-ĕre* to choke, strangle. We may compare with this the Anglo-Saxon *ang-* which in combination meant pain, painful, and the Old Norse *angr* meaning trouble or affliction, to which our word *anger* is related—for from the thirteenth to the fifteenth centuries *anger* meant trouble, affliction, vexation, sorrow; all three are formed on the root *ang* strait, straitened, troubled. Let us note also the word *angina,* which was taken into our language about 1590 and was first used in the expression *angina pectoris* in 1744; *angina* was the Latin word for quinsy, related to *ang-ere* to choke, strangle, and to ἀγχόνη strangling. There is also our word *anguish,* adopted from the Old French *anguisse, angoisse* the painful sensation of choking; related to the Latin *angustia* straitness, tightness, *angustiae* straits, *angustus* narrow, tight; all from the root *angu-* in *ang(u)-ĕre* to squeeze, strangle.

APATHY.—Adopted from the French *apathie,* an adaptation of the Latin *apathia,* representing the Greek ἀπάθεια, noun of condition formed from the adjective ἀπαθής without feeling, from ἀ privative + παθε-(παθος) suffering, passion. In the seventeenth century the word seems to have had its literal meaning of "freedom from, or insensibility to, suffering; hence, freedom from passion or feeling." It was apparently in the following century (whence dates the word *apathetic*) that it acquired its more usual present sense, in general, of "indifference to what is calculated to move the feelings or to excite interest or action."

APPREHENSION.—An adaptation, perhaps through the French *appréhension,* of the Latin *apprehensiōn-em,* noun of action from *apprehendĕre* to seize upon, grasp (in both physical and mental

senses), from *ad* + *prehendĕre*. In the contracted form *apprendĕre* the word survived in the Romance languages in the figurative sense of to grasp with the mind, comprehend, learn; whence later also to teach, inform, as seen in the French *apprendre* and the English *apprise*. Subsequently, the full form *apprehendere* was taken into French and English in its original senses, the mental sense antedating the physical, for which native French or English words were already in use. Its various mental senses—such as the action of grasping with the intellect, intellection; apprehensive faculty, understanding; representation to oneself of what is still future, anticipation (chiefly of things adverse); fear as to what may happen, dread—seem all to have been of more or less simultaneous development (seventeenth century).

AUTOMATISM.—Formed on *automat-on* + *-ism*, a nineteenth century formation. *Automaton* is adopted from the Greek αὐτόματον the neuter of the adjective αὐτόματος acting of itself. *Cf.* also the Greek αὐτοματισμός that which happens of itself, and the French *automatisme*.

BRAIN.—In its original form an Anglo-Saxon word, cognate with the Low German *brägen* and the Frisian *brein*. The Old Teutonic type-word *bragno*(*m*) is conjectured to be possibly related to the Greek βρεχμός forehead.

CATALEPSY.—Adaptation of the medical Latin *catalepsia*, from κατάληψις a seizing upon, formed on καταλαμβάνειν to seize upon. Defined by the *Oxford Dictionary* as "A disease characterized by a seizure or trance, lasting for hours or days, with suspension of sensation and consciousness; a manifestation of hysteria," it is first found in English as early as 1398 in the passage: "There ben thre manere of Epilency . . . . Epilencia . . . . Analempsia . . . . Cathalempsia." In a more modern sense the word is found in Sir Thomas Browne (1646). Psychiatrically, the word has reference to the maintenance of positions or postures in which a patient's limbs have been passively placed (Kraepelin; Hoch, Kirby, MacCurdy)—a phenomenon exhibited, for example, by about one-third of Hoch's cases of "benign stupor," as well as being even commoner in catatonic dementia præcox.

CATATONIA.—Formed on κατά (in its intensive sense, "thoroughly," "completely") + τονία, from τόνος tone. The latter word reminds us that the Pythagoreans held the body to be strung like

an instrument to a certain pitch, according to which view "health is just being in tune, and disease arises from undue tension or relaxation of the strings"; so we have *tone* and *tonic* in medicine as well as in music. Thus, also, τόνος was a vital quality to which the Pneumatists attached much importance; syncope was thought by them to consist in a loss of τόνος. But the word *catatonia* was introduced into Psychiatry by Kahlbaum merely as a translation of *Spannungsirresein* or "tension-insanity," having reference to the motor tension symptoms, the rigidity and immobility of these patients. In Kahlbaum's words (*Die Katatonie, oder das Spannungsirresein,* 1874): "Da in jedem Falle eine Abänderung in dem Spannungszustande der Musculatur oder vielmehr der betreffenden Nerven voransgesetzt werden darf, möchte ich diese Krankheit das *Spannungs-Irresein* oder *vesania katatonica* (*Katatonia*) nennen, ohne dass mit dieser Benennung über die Natur des Symptoms und der Krankheit eine bestimmte Ansicht präsumirt werden soll" (p. 23).

CHARACTER.—Middle English *caracter,* adopted from the French *caractere,* an adaptation of the Latin *character,* borrowed from the Greek χαρακτήρ, instrument for marking, impress, stamp, distinctive mark, distinctive nature, formed on χαράττ-ειν to engrave. In the sixteenth and seventeenth centuries the word was often pronounced *chara'cter.* Of the 19 meanings assigned to it by the *Oxford Dictionary,* the eleventh is given as: "The sum of the mental and moral qualities which distinguish an individual." In this sense the word is first found in English in 1647.

COMPLEX.—Adaptation of the Latin *complex-us* surrounding, encompassing, encircling, compass, embrace; from the past participial stem of *complectĕre* or *complectī* to encompass, embrace, comprise. The word was adopted in the seventeenth century, meaning "a whole comprehending in its compass a number of parts," especially, in later usage, "of interconnected parts or involved particulars." In its (rather recent) psychiatric usage, a complex might be defined as "a group of ideas clustered about some central event or experience, and cemented as well by some emotion, usually painful, associated with that experience, this 'constellation' of ideas having become unconscious." According to Freud, the theory of "complexes" grew out of Jung's *Studies in Word Association* (1906 to 1910). But the word has now become somewhat outmoded, though

it continues to flourish as a recent addition to the lay vocabulary; "none of the terms coined by psychoanalysis for its own needs," said Freud in 1914, "has achieved such widespread popularity, or been so misapplied to the detriment of formulating clear concepts."

COMPULSION.—Adopted from the French *compulsion,* which is found in the fourteenth century, an adaptation of the Latin *compulsiōn-em,* from *compellĕre* to compel.

COMPULSIVE.—Adaptation of the Latin type *compulsīvus* (a word not found as such), from the past participial stem of *compellĕre*+*īvus.* To the latter is related our frequent suffix *-ive,* used to form both adjectives and nouns. Formerly also *-if* and *-ife,* it was adopted from the French *-if, -ive;* nevertheless, few words made up in this way are said to have come to us directly from the French—one of these few being naïve.

CONFABULATION.—Adaptation of the Latin *confābulātiōn-em,* noun of action formed on *confābulāri,* from *con-*+*fābulāri* to talk, chat; related to *fābula* a tale, from *fāri* to speak (from the past participle of which we have our word *fate*). The word thus means, and is defined in the dictionary as, "familiar talk, conversation, chat"; a word found in English as early as the fifteenth century, while the verb *confabulate* apparently came in during the seventeenth. The connotation of *fictitious* statement or narrative present in the word as used in psychiatry is undoubtedly an echo of the *fabula* (fable) which the word incorporates—the equivalent of the German *Fabulieren* which has this fictional sense both in the vernacular and in psychiatry.

CONSCIOUS.—Formed on the Latin *consci-us* meaning literally "knowing something with others," from *con-* together+*sci-* knowing. The Latin had also *nescius* not knowing, and *prescius* foreknowing; but we have *nescient* and *prescient* (and their nouns), although *conscient,* too, was formerly used more or less interchangeably with *conscious,* as in Bacon's *Advancement of Learning* ("as if he were consciente to himselfe that he had played his parte wel"). The English philosopher Locke is said to have been the first to use *conscious* in the sense of "having internal perception of one's sensations, feelings, thoughts, etc." (1690).

CONSCIOUSNESS.—An example, by no means uncommon, of an English suffix added to a Latin word. Locke first defined the word (1678) as "the perception of what passes in a Man's own mind."

Conscience (of the same root; adopted from the French *conscience,* which goes back to the twelfth century, from the Latin *conscientia* knowledge within oneself, consciousness) took the place in Middle English of the earlier term *inwit* in all its senses (*cf.* the German *Gewissen*); it thus meant both *consciousness* and *consciousness of right and wrong, moral sense,* but the former meaning has become obsolete, while the latter, which dates from the thirteenth century, has been preserved. Consciousness is to the Behaviorists what God was to Laplace (as he told Napoleon), a hypothesis for which he had no need.

CYCLOTHYMIA.—The first part of the word represents the Greek κύκλος circle, familiar in such words as *cycle, bicycle, encyclopedia,* etc. The second element is derived from the Greek θυμός (related, it is believed, to the verb θύω, used of any violent motion and meaning "to rush on or along"). The word θυμός, which Rohde calls untranslatable, seems most usually to refer to the feelings or passions, more or less collectively; it may mean "spirit" or "courage," or it may be used for the seat of anger, or it may signify the heart "as the seat of the softer feelings, as joy and grief." Diogenes Laertius says that Pythagoras (latter sixth century, B. C.) divided the "soul" (ἡ ψυχή) into ὁ νοῦς, αἱ φρένες and ὁ θυμός; and that man had in common with other animals ὁ νοῦς (understanding) and ὁ θυμός (sensibility), but he alone had αἱ φρένες (reason). Plato divided the "animal part of the soul" into θυμός *spirit* or *passion,* and ἐπιθυμία *appetite;* τὸ θυμοειδές was that part of the soul in which resided courage, spirit, passion, superior to τὸ ἐπιθυμητικόν in which resided the appetites.

(Our word *thymus* is derived from the differently accented θύμος meaning *sweetbread,* or, in Galen, *thymus*).

DELINQUENCY.—An adaptation of the Latin *delinquens,* present participle of *dēlinquĕre* to fail, be lacking, be at fault, offend; formed on *dē*+*linquĕre* to leave. *Delinquentia* occurs in late Latin. According to the Oxford Dictionary, the word is first found in English in 1648; but Holland used *delinquent* in 1603 in his translation of Plutarch. Another form of the Latin word occurs in the lawyers' phrase *in flagrante delicto,* meaning "in the very act of committing the crime," which, as we all know, has been humorously translated "in flagrant delectation"!

DELIRIUM.—Adopted from the Latin *delirium,* which was used by Celsus (25 B. C.–50 A. D.) for madness, derangement; derived from *dēlirāre* to be deranged, crazy, out of one's mind; originally, *to leave the furrow,* from *dē*+*lira* a ridge or furrow in ploughing. The word *delirium* is found in English as early as 1599; but the verb *to delire* (*cf.* the French *délirer*), dating back to 1400, has become obsolete. (The French term *délire,* often mistranslated *delirium,* does not usually have this meaning in French psychiatry. Formerly it was more or less synonymous with *folie,* meaning therefore "mental alienation," "insanity," or mental disease in general, or "psychosis"—hence largely preserving the etymological sense of the word. More recently, *délire* has become applied to mental syndromes possessing some general connecting thread—as in *délire de persécution, délire melancolique, délire de négation, délire de grandeur, délire hypocondriaque,* etc. Thus it is at times the equivalent to "delusion" or better "delusional state," but must often be translated variously as the customary English usage indicated by the particular context dictates.)

DELIRIUM TREMENS.—Modern medical Latin for a trembling or quaking delirium. According to the Sydenham Society Lexicon, "the term was introduced by Dr. Sutton, in 1813, for that form of delirium which is rendered worse by bleeding, but improved by opium. By Rayer and subsequent writers it has been almost exclusively applied to delirium resulting from the abuse of alcohol."

DELUSION.—Adaptation of the Latin *delusiōn-em,* noun of action from *deludĕre* to deceive, play false, mock, delude. In its most general sense the word appears to have first occurred in English in the sixteenth century; Fraunce in 1588 wrote of men who "fell headlong into divers delusions and erroneous conceiptes." False beliefs are perhaps the most ubiquitous of mental phenomena; for they are the product of "wishful thinking," of the tendency of the human mind, as Dr. Macfie Campbell has expressed it, "to see the world in the light of our desire"—(Pasteur prefixed as a motto to his *Études sur la Bière* the words: "The greatest distortion of the intellect is to believe things because one wishes them to exist"). The decision as to the "pathological" nature of a false belief—as to its being a "delusion" in the pathological sense—commonly rests, then, upon the degree of its falsity, upon the completeness of its lack of correspondence with what we take

to be reality—sometimes a difficult matter to estimate; and had we not better add—since many "normal" false beliefs are at least as false as many "delusions" in the pathological sense—that we also take as a criterion the extent of the breaking down of the general *critique* of the subject and the extent to which in consequence the belief invades his personality? A classmate of mine, now a college professor, once earnestly believed that he was a reincarnation of Julius Cæsar; though a creed so comforting to its possessor and so radically out of accord with the probable facts might give the observer pause, we did not consider it a delusion *sensu strictori* nor him who harbored it insane. Perhaps it is with a delusion in the psychiatric sense as it is with Poetry: one (sometimes) recognizes it when one sees it, but it is less easy to say just what it is.

DEMENTIA.—The Latin *dementia* madness, from *demens, dement-em* out of one's mind, from *dē*+*mens* mind. In the sixteenth and seventeenth centuries the word was *demency* (the French demence of the fifteenth century), meaning "madness, infatuation." It first acquired its present form in the rendering of the term *démence* of Pinel in Davis's translation (1806) of Pinel's *Treatise on Insanity*.

DEPRESSION.—Adaptation of the Latin *depressiōn-em,* noun of action formed on *deprimĕre* to press down; but perhaps directly from the French *depression,* which is found in the fourteenth century. In the sense of dejection the word was used as early as 1665.

DETERIORATION.—Adopted from the French *détérioration,* noun of action from the verb *détériorer,* an adaptation of the Latin *dēteriorāre* to make worse, from the adjective *dēterior* worse, poorer, the comparative of an obsolete adjective *dēter,* from *dē* down. The word is first found in English about the middle of the seventeenth century; the verb *deteriorate* some fifty years earlier.

DISORIENTATION.—See *dis-* under *Dissociation,* and *Orientation.*

DISSOCIATION.—Adaptation of the Latin *dissociatiōn-em,* noun of action from *dissociāre* to dissociate, to separate from fellowship, from *dis-*+*sociāre* to join together, associate. The prefix *dis-* is considered related to *bis* (twice) which was originally *dvis,* equivalent to Greek *δίς* twice, from *δύο* two; the primary meaning being "two-ways, in twain," hence asunder, apart. *Dissociate* and *dis-*

sociation are found early in the seventeenth century; *dissociation* is found in French in the sixteenth century.

DREAM.—This word is found in Middle English, but does not occur as such in Anglo-Saxon, perhaps because of possible confusion with another word *dream* meaning joy. It is obviously related to the Frisian *dram*, Dutch *droom*, Middle High German *troum* (German *Traum*), and Old Norse *draum*. One philologist has made the suggestion that through the Germanic *draumo-* or *draugmo-*, a derivative of the word series *dreug-* or *draug-* to deceive, delude (German *trügen*), whence the Old Norse *draugr* ghost, apparition (*cf.* the Zend *druj* apparition), the root sense of this word is "deceptive appearance, illusion."

The Greek for dream, ὄνειρος, is seen in a few words such as *oneirocritic* and *-criticism, oneirology, oneiromancy*. One may note in passing that the *-mancy* comes ultimately from the same root as *mania;* for the former is derived from μαντεία the faculty of prophecy or divination, from μάντις prophet, literally "one affected or inspired by divine madness." The point is discussed by Plato in the *Phaedrus* (244), where he says that the only difference between ἡ μαντικὴ [τέχνη] the prophetic art, and ἡ μανική madness, is that due to "the tasteless insertion of a *t*" (ἀπειροκάλως τὸ ταῦ ἐπεμβάλλοντες).

EGO.—The Latin *ego* I (Greek ἐγώ).

EGOCENTRIC.—*Ego*+*-centric*, a modern adaptation of the Greek κεντρικ-ός pertaining to the centre, formed on κέντρον sharp point, from the same root as the verb κεντέ-ειν to prick, stab.

EMOTION.—Adaptation of the Latin *ēmōtiōn-em* noun of action formed on *ēmovēre*, from *ē* out+*movēre* to move. Harper's Latin Dictionary does not give the word *emotio*, however, but states that *emovere* occurs in Vergil in the sense of *to shake*, later meaning *to stir up, agitate* in the physical sense; and Seneca, who coined numerous words or at least imported them from the spoken into the written language, has the phrase *mens emota* disturbed mind. In English the word dates from the seventeenth century, both in a physical sense and meaning "any agitation or disturbance of mind." Its use in the sense of an affective state, or of affectivity, as distinguished from cognitive or volitional states of consciousness, seems to have developed in the nineteenth century. (See

under *Affect.*) Of *emotion* (as of certain other words) one might say with Goethe:

> *Denn eben wo Begriffe fehlen,*
> *Da stellt ein Wort zur rechten Zeit sich ein.*

EPILEPSY.—Adopted from the Old French *epilepsie,* an adaptation of the Latin *epilepsia,* which in turn was taken from the Greek ἐπιληψία, formed on ἐπιλαμβάνειν to take hold of, from ἐπί upon+ λαμβάνειν to take. It is curious that in the Hippocratic treatise *The Sacred Disease,* which is generally taken to refer to epilepsy, the word ἐπίληψις occurs only once, where it means "seizure." In English the word formerly had other forms: *epilency, epilence, epilencye,* etc.; in 1398 we find: "They that haue . . Epylencye thei fele not toforhonde whan they shal falle"; and these spellings are found as late as 1540. As *epilepsy* the word first occurs, according to the *Oxford Dictionary,* in 1578; and in *Othello* (1604) we have: "My Lord is falne into an Epilepsie; This is his second fit."

EROTISM.—Formed on the Greek ἔρως, ἔρωτ-ος (sexual) love +*-ism.* (*Cf.* the French *érotisme.*) Eros, as a personification, was also the Greek god of love, corresponding to Cupid (Latin *cupido* passion, from *cupio* I desire); he was the son of Hermes (Mercury) and Aphrodite (Venus), the fairest among the immortal gods, according to Hesiod (*Theogony*), who "loosens the limbs and subdues the understanding and prudent counsel in the breast of every god and every man."

EUPHORIA.—Adaptation of the Greek εὐφορία formed on εὔφορος well-bearing, from εὖ well+ φέρειν to bear. It formerly meant the property of being well-borne, as of a medicine; the *Oxford Dictionary* says it was first used in 1727 in its present signification, which the Sydenham Society lexicon gives as "well-being, or the perfect ease and comfort of healthy persons, especially when the sensation occurs in a sick person." The adverb εὖ is seen in a few English words such as *eugenics, Eugene, euphemism, euphuism, evangelist.* One is reminded, also, of the superstition whereby the Greeks seemingly used the word as a sort of propitiatory euphemism: the *Eumenides,* the kindly disposed ladies, for the Furies; *euonymus,* the well-named, for the *left* wing of an army; the *Euxine,* the hospitable, for the Black Sea whose storms they feared.

EXTRAVERT.—The word made popular by Jung was first used, but in connection with chemistry, in the seventeenth century. *Extrovert* and *extroversion* are forms also given by the *Oxford Dictionary,* which says that *extro-,* non-existent in Latin, is an alteration of *extra-* on the analogy of *intro-* inwards, as compared with *intra* inside; adding that *extrovert* is found as a verb in 1804 in the sense of "to give an outward direction to thought." *Extroversion* was formerly employed where we now say *exstrophy* (of the bladder).

FANTASY.—Adopted from the Old French *fantasie* (French *fantaisie*), an adaptation of the Latin *phantasia,* from the Greek φαντασία literally "a making visible," from φαντάζειν to make visible, from φάνειν to show. Says the *Oxford Dictionary:* "The senses of φαντασία from which the senses of the word in modern languages are developed are: 1. appearance, apparition, phantom; 2. the mental process or faculty of sensuous perception; 3. the faculty of imagination. These senses passed through Old French into English, together with others (delusive fancy, false or unfounded notion) which had been developed in late Latin, Romanic or French. The shortened form *fancy,* which apparently originated in the fifteenth century, had in the time of Shakespeare become more or less differentiated in sense. In modern use there has been a tendency to treat the two spellings of the word as separate words—*fantasy* as caprice or whim, *phantasy* as imagination or visionary notion or idea."

GRANDIOSE.—Adopted from the French *grandiose,* an adaptation of the Italian *grandioso,* formed on the Latin *grand-em,* meaning in classical Latin "full-grown, big," but in late popular Latin superseding *magnus* in all its uses. Some scholars have regarded the word as cognate with the Greek βρενθύεσθαι to swagger.

The suffix *-ose* represents the Latin *-ōsus* meaning full of, abounding in, which came down to French as *-eus, eux,* and to English as *-ous.* But since the fifteenth century a few such words formed directly from the Latin have achieved a place in the language—as *bellicose* (fifteenth century), *jocose, morose, verbose* (seventeenth century), *otiose* (eighteenth century), and *grandiose* (nineteenth century).

HALLUCINATION.—An adaptation of the Latin *alucinatio,* formed on the verb *alucināre* to wander in the mind, talk idly, prate. The

use of the word for the apparent perception, usually by sight or hearing, of an external object when no such object is actually present, appears to go back to Sir Thomas Browne, who says in the *Pseudodoxia Epidemica* (1646): "If vision be abolished, it is called *caecitas,* or blindnesse, if depraved and receive its objects erroneously, Hallucination." *Hallucinate* as a verb, either transitive, meaning to deceive, or intransitive, to be deceived or suffer illusion, was used in the seventeenth century, but is now obsolete save as meaning, in psychiatry, to be the victim of hallucinations.

HEBEPHRENIC.—The first part of the word is the Greek ἥβη meaning youth, also puberty. In personified form Hebe was the goddess of youth and spring, the daughter of Zeus and Hera, represented as having been originally the cup-bearer of Olympus (later succeeded by Ganymede).

The second part is derived from φρήν. The primary meaning of this word (usually in the plural) was *diaphragm* or *midriff,* the equivalent of the later word διάφραγμα. On this account we speak of the *phrenic* nerve. In Homer, φρήν or φρένες was used in the somewhat enlarged sense of the parts about the heart; whence it came to signify the heart, not in the purely physical sense, but as the seat of the passions, as of fear, joy and grief, and of the bodily appetites such as hunger; finally, the heart or mind, as the seat of the mental faculties (see under *cyclothymia*). (It will be recalled that Aristotle believed the heart to be the central sense-organ, although Plato (*Timaeus*) and before him Hippocrates (*de Morbo Sacro*) had already held the brain to be the essential organ of sense and thought; while, in the words of Gomperz, the claim of Alcmaeon (sixth century, B. C.) to immortality rests on the fact that he was the first to recognize the brain as the central organ of intellectual activity). In these latter senses of φρήν, φρένες we have in English as derivatives not only the psychiatric terms *paraphrenia, presbyophrenia* and *schizophrenia,* but also *phrenology,* and, less directly, *frenzy* (formerly *phrenzy*), *frantic,* and *phrenetic* (formerly stressed *phre'netic,* whence *frantic*). The last three all have a common source in the late Latin *phrenēticus* delirious, a corruption of the Greek φρενιτικός, affected with φρενῖτις delirium, in which term we again encounter the derived sense of φρήν as the seat of the mental faculties.)

HYPNAGOGIC.—Adaptation of the French *hypnagogique*, formed on the Greek ὕπνος sleep + ἀγωγός leading, from ἄγειν to lead. The word properly means inducing or leading to sleep, but it has come to signify "that accompanies falling asleep"; it was first used in this acquired sense by Gurney in *Phantasms of the Living* (1886). It is said that the compounds of ὕπνος in Greek were not numerous, and that all those employed in English are new formations.

HYPNOTIC.—Adaptation of the French *hypnotique*, which is found in Paré (sixteenth century); from late Latin *hypnōticus*, adopted from the Greek ὑπνωτικός inclined to sleep, sleepy, putting to sleep, from ὑπνό-ειν to put to sleep.

HYPNOTISM.—From *hypnot-ic* + *-ism*. The word is due to Dr. James Braid of Manchester, who in 1842 introduced the term *neuro-hypnotism* for "the state or condition of nervous sleep," and in 1843 used the shortened form *hypnotism* when the context made the sense clear.

The very common suffix *-ism* (French *isme*) is adopted from -ισμός, which the Greeks used to form nouns of action from verbs in -ίζειν; and we use the suffix in the same way in relation to many verbs ending in *-ize*. Although some of the latter have come down from the Greek (as *symbolize, sympathize, theorize*), many others have been formed subsequently (in French or English) on Latin adjectives and substantives (as *authorize, pulverize, solemnize*) or from later sources (as *gormandize, jeopardize*).

HYPOCHONDRIA.—Adaptation of the late Latin *hypochondria*, adopted from the Greek τὰ ὑποχόνδρια, the soft parts of the body below the costal cartilages (translated into Latin by Celsus as *praecordia*), the word being the neuter plural of ὑποχόνδριος from ὑπό under + χόνδρος gristle, cartilage; hence the viscera situated in the *hypochondrium, i. e.*, the liver, gall-bladder and spleen, formerly supposed to be the seat of melancholy and "vapors" (*cf. bilious, atrabilious, choler* and *choleric, melancholy* (*q. v.*), *"liverish," splenetic, "spleeny"*); hence "a morbid state of mind, characterized by general depression, melancholy, or low spirits." It is interesting that this latter meaning of *hypochondria* was apparently developed in English—probably, the *Oxford Dictionary* suggests, on the supposition that the word was an abstract feminine substantive. Thus in Dryden we have (1668): "I know what you would say, that it is melancholy; a tincture of the hypochondria, you

mean." As an adjective the word is found in 1615, as "indisposed with a hypochondriake melancholy." In 1704 occurs a definition of *vapors* as "the Disease called otherwise Hysterick, or Hypochondriack Fits, or Melancholy."

HYSTERIA.—Modern medical Latin, formed as an abstract substantive to *hysteric*. (*Cf.* the French *hystérie,* which apparently does not antedate 1812.) No instance of the use of the word has been found prior to 1801, according to the *Oxford Dictionary;* the disorder having previously been referred to as *vapors* and as *hysteric(al) passion.*

HYSTERIC(AL).—A much older word in English, *hysterical* being found as early as 1615 and *hysteric* in 1657, while the French *hystérique* is recorded in 1568. The word is an adaptation of the Latin *hystericus,* adopted from the Greek ὑστερικός belonging or pertaining to the womb (from ὑστέρα womb), as in such phrases as ὑστερικὴ πνίξ hysterical suffocation, or the *globus hystericus.* Whence the connection between the uterus and "hysteria"? Says Sir Clifford Allbutt: "From times beyond date, *e. g.,* in the Ebers papyrus, this viscus [the uterus] has been regarded as an animal endowed with independent life and motion, and as using its facilities to course over the inward parts. It was customary in Hippocratic times to use both abdominal palpation and vaginal inspection to ascertain its temporary habitat . . . . Soranus [about 90-150 A. D.] and Galen [130-200 A. D.] both combated this legend; but Aretaeus said that the womb 'closely resembles an animal, for it moves itself hither and thither, etc. It runs after certain odours, and flies from others.' Paul of Aegina [about 600-650 A. D.], in 'suffocation' (πνίξ) and hysterical convulsion, speaks of fragrant ointments passed into the vagina to draw back the uterus to its place; and of stinks to the nose (*e. g.,* valerian) to drive it homewards." Aetius, who is known to have copied from Archigenes (*fl.* about 100 A. D.), ascribed the πνὶξ ὑστερική, hysterical suffocation, to the fact that the restless uterus attacked the heart through the arteries, the liver through the veins, and the brain through the nerves, bringing about a simulation of death due to chill of the pneuma. Soranus, as above noted, repudiated the notion of the wandering of the uterus, but nevertheless implicated that organ in the pathology of hysterical suffocation, which he thought attributable to "an inflammation of the

womb which engendered in the cavity a cold and moist phlegm." Obviously, men could not suffer from hysterical disorders; but women of Rome, according to Galen, were able to make the diagnosis and apply that term: . . . . πολλὰς γυναῖκας ὑστερικάς, ὡς ταὐταί τε σφᾶς ὀνομάζουσιν (Galen, ed. Kühn, vol. viii, p. 416; cited by Allbutt).

The Greek word ὑστέρα itself is of interest in being conjecturally related to ὕστερος *last,* as if its original sense were the last or lowest part, somewhat as ἔντερα intestines (formed as a comparative from ἐντός within, inside) signifies what is inside, the "innards" of vulgar parlance.

IDEA.—Not, of course, a psychiatric term; nevertheless psychiatrists must occasionally deal with ideas, abnormal and other. The word is an adoption of the late Latin *idea* (in the Platonic sense), in turn adopted from the Greek ἰδέα look, semblance, form, configuration, species, kind, class, nature; in Platonic philosophy a general or ideal form, type or model; formed on the root ἰδ- of ἰδεῖν to see, the word thus being analogous in derivation and original sense to the Latin *species,* from *specĕre* to see, behold. Says the *Oxford Dictionary:* "The original development of the word took place in Greek; and it was in the developed Platonic sense that the word was first adopted in the modern languages—as a general or ideal form as distinguished from its realization in individuals; archetype, plan, pattern, standard; other applications of the word became common by the end of the sixteenth century—as figure, form, image; and then as a mental image, conception, notion—a picture of anything conceived by the mind, a conception." In this last sense it is first encountered in English in 1612.

IDIOT.—Adopted from the French *idiot* (found in the thirteenth century), an adaptation of the Latin *idiota,* an uneducated, ignorant person; from the Greek ἰδιώτης a private person (from ἴδιος own, personal, private; hence our *idiopathic, idiosyncrasy*), common man, one without professional knowledge, and so an ignorant ill-informed person. In English, too, the word originally (1300-1700) had this meaning, but at the same time it could also mean "one congenitally deficient in reasoning powers, a 'natural fool.'" *Idiocy* is possibly an adaptation of ἰδιωτεία uncouthness, want of education; but more probably formed on *idiot* by analogy, without reference to the Greek—as *prophecy* from *prophet.*

IMAGO.—Latin *imāgō,* copy, likeness, semblance, appearance. The same root is seen in the word *imitate.*

IMBECILE.—Adopted from the French *imbécille* (fifteenth century) now *imbécile,* an adaptation of the Latin *imbecillus,* weak, feeble in body or mind (a word of unknown composition). From an erroneous impression that the Latin word was *imbecilis* the spelling *imbecile* became established in the eighteenth century. Until the nineteenth century the word was stressed on the second syllable: *imbe'cile;* and this pronunciation was in part responsible for its former confusion in the popular mind with the word *embezzle.*

INSANITY.—Adaptation of the Latin *insānitāt-em,* unsoundness, disease, noun of quality formed on *insānus* unsound (in mind), from *in-* + *sānus* healthy, sound in body or mind. Both *insane* and *insanity* date from the sixteenth century; during at least the sixteenth and seventeenth centuries the latter was referred to as *insanity of mind.* During the sixteenth century the word *insanie* was occasionally used—an adaptation of the Latin *insānia,* which Cicero said was to be distinguished from *furor,* the former the equivalent of the Greek *μανία,* the latter of *μελαγχολία.*

INVOLUTION.—Adaptation of the Latin *involutio,* noun of action from *involvĕre* to roll up, envelope, involve. (The French word *involution* dates back to the thirteenth century.) Hence, among several other meanings, the word denotes a retrograde process of development, the opposite of evolution.

LIBIDO.—The Latin *lībīdo* (or *lŭbīdo*), related to *libet* it is pleasing or agreeable (*cf.* Greek *λίπτειν* to desire; Latin *līber* "that acts according to his own will and pleasure," free; German *lieb* dear). *Libido* in its most general sense had in Latin the meaning of pleasure, desire, eagerness, longing, inclination. It also acquired the specific meaning of *unlawful* or *inordinate desire, passion;* and in the plural usually signified *sensual desire, lust* (whence our *libidinous*).

LUNATIC.—Adaptation of the late Latin *lūnāticus* moonstruck, crazy, lunatic; from *lūna* moon; incorporating the ancient belief that the supposed recurring periods of "lunacy" depended on changes of the moon. From the Greek word for moon, *σελήνη* (whence our word for the element *selenium*), were formed in late Greek the adjectives *σεληνιακός, σεληνόβλητος* and *σεληνόπληκτος,*

meaning literally *moonstruck,* and the verb σεληνιάζεσθαι to be moonstruck; but these words refer to being, not what we call lunatic, but *epileptic;* and it is stated that in Origen the noun σεληνιασμός is clearly identified with ἐπιληψία epilepsy. *Lunatic* is found in English as an adjective as early as 1290 ("He hadde ane doughter that was lunatyke"), and as a noun shortly afterwards. *Lunacy,* a more recent word, is found in 1541, originally with the sense of a *recurrent* form of mental alienation, which it has since lost.

MANIA.—Adopted from the Latin *mania,* a borrowing of the Greek μανία madness; the latter related to the verb μαίνεσθαι to be mad, to rage, from the Indogermanic root *men-,* represented in many words referring to mental or emotional states (as μῆνις rage, μένος mood). Hence one of the uses of the word in English as denoting mental derangement, especially if accompanied by great excitement and physical violence: "Mania came to hir and was oute of hir witt" (about 1400). A second meaning of the word seems to have been acquired in the seventeenth century under the influence of the French *manie,* such that the word came also to denote "an enthusiasm resembling madness," or simply a "craze" or "rage." (And in French psychiatry *manie* does not so usually mean *mania* in our more customary sense as it does a compulsive or obsessional state.)

Regarding our numerous words in English, technical or other, ending in *-mania,* it might be mentioned that there were in Greek a few words ending in -μανία expressing the general sense of a certain kind of madness, the state of being mad after some object, together with related adjectives in -μανής (as we say money-mad); such as γυναικομανία, ἐρωτομανία, etc. But in the sixteenth and seventeenth centuries, says the *Oxford Dictionary,* a number of quasi-Greek compounds were invented and used in medical Latin, and some of these, such as *nymphomania,* have been adopted in English. Still other technical and quasi-technical words were formed in the nineteenth century, as *kleptomania, megalomania, pyromania.* The French *manie* suggested also the formation of other quasi-Greek compounds with the signification represented in such words as *bibliomania, decalcomania, Anglomania,* etc.

MANIAC.—Adaptation of the late Latin *maniacus,* as if from a Greek word μανιακ-ος (which does not occur as such). As an

adjective the word appears in English for the first time in 1604, but as a noun not until the following century.

MANIACAL.—*Maniac*+*al*. As applied to a person the word is first found in 1678; in the sense of "pertaining to mania," a little later, in 1701.

MANIC.—Adopted from the Greek μανικός mad, affected by μανία. The term "manic-depressive" we owe to Kraepelin, who first used it in the sixth edition of the *Psychiatrie* (1899).

MASOCHISM.—Taken by Krafft-Ebing, as furnishing a convenient counterpart to the term *sadism*, from the name of the Austrian novelist, Leopold von Sacher-Masoch (1836-1895); it is on the strength of a considerable number of his novels and stories, more especially of *Venus in Furs*, that Krafft-Ebing, says Havelock Ellis, "took the scarcely warrantable liberty of identifying his name, while yet living, with a sexual perversion."

MELANCHOLIA.—Adopted from the Old French *melancolie*, an adaptation of the Latin *melancholia* from the Greek μελαγχολία, literally a "condition of having black bile," from μέλας, μελαν- black+ χολή bile.

In his interesting *Malaria and Greek History*, W. H. S. Jones states it as his belief that it is impossible to avoid the inference that malaria was the chief source of what the Greeks called melancholia. For melancholia was observed by Hippocrates (*Aphorisms*) to be most common in spring and autumn—that is, at the beginning and at the height of the malarial season. Furthermore, quartan fevers were attributed by the Greeks to "black bile" (ἡ μέλαινα χολή), and large spleens to an excess of that substance (Galen); while melancholia was, as its name states, the "black bile disease." Since there is this connection in the Greek medical writers between melancholia on the one hand, and autumn, enlarged spleens and the supposed cause of quartan fevers on the other, it appears, says Jones, that "the Greeks were acute enough to see that malaria may, directly or indirectly, produce a change of character; and this conviction found expression in the common use, in the popular speech, of the words μελαγχολία, μελαγχολῶ, μελαγχολικός to denote that a man was crazy or neurotic." As a more technical term, μελαγχολία was later defined by Galen as a non-febrile disorder characterized by "profound depression and

aversion from the things the patient loves best" (*δυσθυμίας ἰσχυρᾶς καὶ ἀποστροφῆς τῶν φιλάτων*).

The word further recalls, of course, the doctrine of the humours, which, possibly of Egyptian origin, is found in the Pythagorean Philolaus (*fl.* about 440 B. C.), and is mentioned in the Hippocratic writings in various places. The humours appear to be variously two, three, or four, or of an indefinite number—blood (Latin *sanguis,* whence our *sanguine*), phlegm (Latin *pituita,* whence *pituitary*), bile (*χ λή,* whence *choler, choleric*), black bile (*μέλαινα χολή*), *ὕδρωψ* a watery humour (our *hydrops* and *dropsy*); they are sometimes stated as corresponding to the four elements, earth, air, fire and water, and their cardinal properties, dryness, warmth, coldness and moistness. Health depended upon the proper balance or harmony of the humours (*eucrasia*), and disease was directly caused by disturbance in this balance (*dyscrasia*), by the undue preponderance (*μοναρχία*) of one of them. "We may remember," says Dr. Singer, "that the first half of the nineteenth century had waned before the doctrine of the humours which had then lasted for at least twenty-two centuries became obsolete"; while the doctrine remains embedded in the language of the present day, as when we speak of a man's temperament as *phlegmatic, sanguine, melancholy* or *bilious*—and *temperament* itself simply refers to the mixture or balance of the humours (Latin *temperamentum* due mixture, from *temperāre* to mingle in due proportion, to combine properly, "perhaps from *tempus* a time or season, the proper time or season"). But although the Stoics (especially Seneca) had held that the varieties of human character are due to the various admixtures of the four elements, a theory further developed by Galen (*De Temperamentis*), we owe the names of the temperaments as we know them—*choleric, sanguine, melancholic* and *phlegmatic*—to the Arab physician Johannitius (Honeïn ben Ishak, 809-873 A. D.), while Honorius, in the twelfth century, brought them into general use (J. van Wageningen: *De Quattuor Temperamentis*). As for the word *humor* itself (Latin *hūmōr-em,* more properly *ūmōr-em; cf.* our *humid*), it was not until the end of the seventeenth century that it acquired its most frequent present-day sense of that quality which excites amusement or the faculty of perceiving what is ludicrous or amusing. (The French

humeur formerly (in Voltaire's day) possessed this sense, but now it more usually means *bad humor*.)

MEMORY.—Adopted from the Old French *memorie, memoire, memore* (modern French *mémoire*), an adaptation of the Latin *memoria,* noun of quality formed on *memor* mindful, remembering. Curiously enough, there is stated to be no etymological connection between the Latin *memor,* mindful, remembering, and the verb *memini* I remember (somewhat as our *sorrow* and *sorry* are not etymologically related). The former is a formation on the root *mer-,* Sanskrit *smar-,* to remember; the latter is a derivative of the Indogermanic root *men-, mon-, mn-,* to think, remember, intend; other such derivatives are the Greek μέμονα I yearn, Latin *mens* mind, and *monēre* to advise. Our word *mind,* of Anglo-Saxon origin, meant originally memory.

MENTAL.—A word first found in English as early as about 1425; an adaptation of the late Latin *mentalis* pertaining to the mind, from *mens, ment-is* mind. One may note in passing the somewhat frequent inability of the English language to form adjectives from nouns of native origin (*mind: mental, eye: ocular, neck: cervical, moon: lunar, cow: bovine*), and this in spite of possessing a number of native suffixes with this capacity (as *-ful, -ish, -like, -ly, -some, -y*). It is true that adjectives of both native and Latin origin may sometimes be used; here the adjective of native formation has often a derived or less literal meaning (*maternal, motherly; solar, sunny; manual, handy; dental, toothsome; astral, starry; aqueous, watery*), although sometimes the distinction is slight or of a different character (*regal, kingly; osseous, bony; feminine, womanly, womanish; virile, manly, manful, mannish*).

MIND.—Middle English *mynd;* representing the Anglo-Saxon *gemynd,* the same word as the Old High German *gimunt,* Gothic *gamund,* memory. The primary meaning of *mind* is *memory*—as seen in such phrases as *to bear in mind, to call to mind, time out of mind.* It came also to mean *thought, purpose, intention*—as in *to know one's mind, to have a mind to.* Finally it meant "mental or psychical being or faculty" in general; "the seat of a person's consciousness, thoughts, volitions and feelings"; and, in more restricted application, "the cognitive or intellectual powers, as distinguished from the will and emotions."

Of the insight of the poet, in relation to the human mind, an excellent example is certainly visible in Wordsworth's lines:

> "Not Chaos, not
> The darkest pit of Erebus,
> . . . . can breed such fear and awe
> As fall upon us often when we look
> Into our Minds, into the Mind of Man—"

MORON.—Adaptation of the Greek μωρός foolish. We have the latter also in *oxymoron* and in *sophomore* (?), which perhaps means literally *wisely foolish* or *foolishly wise.*

NARCISSISM.—Havelock Ellis says: "I described the perversion, as a variety of auto-erotism, in '*The Alienist and Neurologist,*' invoking the name of Narcissus. Naecke reproduced my description and added 'ismus' to Narcissus." The legend of Narcissus, the youth who became enamored of his own reflection in a pool, is known to all.

NARCOLEPSY.—Formed on *narco-* as a combining form of the Greek νάρκη numbness, deadness, related to ναρκοῦν to benumb, stupefy (whence our *narcosis, narcotic,* etc.) + *-lepsy,* as in *epilepsy,* etc. (Narcissus, the flower (νάρκισσος), has been derived by both Pliny and Plutarch from νάρκη, in reference to the heavy or narcotic effects produced by it.) The term *narcolepsy* was used for the first time by Gelineau in 1880 to describe "a new species of neurosis" unconnected with epilepsy and characterized by irresistible attacks of sleep of variable depth lasting usually some minutes; for this disorder—"a disease *sui generis*"—Adie would reserve the term *narcolepsy,* discountenancing its application to attacks of sleep, or to excessive or untimely sleep, as seen in numerous other conditions (*Brain,* Sept., 1926).

NEGATIVISM.—A nineteenth century formation, from *negative* + *ism. Negative* is an adaptation of the French *négatif, -ive* (thirteenth century), or of the late Latin *negātīvus,* from *negāt-,* the past participial stem of *negāre* to deny, say no, refuse.

NEUROSIS.—Adaptation of the Greek νεύρωσις (a word not found as such), formed on νεῦρον nerve. It is said that the first use of the word in English occurs in William Cullen's *First Lines of the Practice of Physic* (1769). Cullen divided diseases into two main classes—Pyrexiae and Neuroses, the second class no less heterogeneous and inconsistent than the first, and, to borrow Sir Clifford

Allbutt's words, " founded no less on very superficial resemblances and analogies,' including everything from whooping-cough to hydrophobia, from diabetes to mania. Latterly the word has come to signify a morbid affection of the nervous system without ascertained anatomical basis and without any known material agent producing it; the symptoms might be directly referable to the nervous system (supposedly), or to some viscus whose dysfunction, in the absence of demonstrable pathology, was attributed also to the nervous system. Thus we find in Good's *Study of Medicine* (1822): " He considers lead colic to be a neurosis "; and asthma and angina pectoris, for example, have sometimes been referred to as neuroses, while we still occasionally speak of a " cardiac neurosis " or a " gastric neurosis." This latter is a heritage, apparently, of the conceptions of Romberg (1857), Erb (1874), and others, who divided neuroses into disorders (without anatomical changes) of the motor and sensory nerves, respectively, among which were included torticollis, writer's cramp, tetany, and even rabies and tetanus, while a similar emphasis on the peripheral end-apparatus is discernible in the " organ-neuroses " (cardiac and gastric neuroses) dealt with as comparatively recently as in Lewandowski's *Handbuch*. The part played by the psyche in the neuroses, though already suggested by Sydenham and in 1859 by Briquet (so says von Monakow), received its first real impetus in the work of Charcot, Liébault, Bernheim and Forel. We now speak of neuroses when it is a question of dysfunction of the autonomic nervous system (of uncertain etiology), as in Raynaud's disease, angioneurotic edema, erythromelalgia, etc., and also in those conditions in which the symptoms seem to be largely determined by psychic mechanisms—the *psychoneuroses*. From the latter, as is well known, Freud has separated out the *Aktualneurosen* (" neurasthenia," anxiety neurosis, and hypochondria) as contrasted with the psychoneuroses proper (conversion hysteria, anxiety hysteria, and compulsion or obsessional neurosis)—the latter differing from the former, according to Freud, in possessing a psychological structure capable of analysis (hence the practical diagnostic criterion, often not offered by the symptoms themselves, of the behavior of the condition under analysis), in arising in past rather than present (*aktual*) circumstances, and in having a psychic rather than a somatic origin.

The term *neurosis* suggests the prevalent use, both lay and medical, of the word *nervous* as applied to conditions which are often primarily of the character of mental or emotional disorders; a person has "disordered nerves" or is suffering from a "nervous breakdown," instead of being the victim of a "minor" or "major" psychosis. *Nerve* originally meant tendon or sinew (as did the Latin *nervus* and the Greek *νεῦρον*), which originally was not distinguished from a nerve as such; this usage survives only in the expression "to strain every nerve." The word *nervous,* in its thus secondary signification of "of or belonging to the nerves," is found in the seventeenth century; in the following century it came also to mean "affecting the nerves; characterized by a disordered state of the nerves," as *nervous diseases;* also, of persons, "suffering from nervous disease," and thence, by extension, "excitable, easily agitated, timid"—and one may note Samuel Johnson's comment on the latter usage (1783): "A tender, irritable, and as it is not very properly called, a nervous constitution." *Nervousness,* in the sense of the state of being nervous, is first found in 1798. It is, of course, much more important, self-protectively, that the patient should have a physical disease than a mental one; hence the well-known satire in *Erewhon* (1872) in which Samuel Butler far-sightedly represents those who consult a physician as telling him freely and willingly of their mental symptoms, but doing all in their power to conceal from him the disgraceful fact that they suffer from any physical ailment.

Obsession.—Adaptation of the Latin *obsessiōn-em,* noun of action from *obsidēre* to sit at or opposite to, sit down before, besiege, occupy, possess. The use of the word as signifying "the action of any influence, notion, or 'fixed idea' which persistently assails or vexes, especially so as to discompose the mind" goes back to the late seventeenth century.

Orientation.—Noun of action from the verb *orientate* or *orient. Orientation* and *disorientation* are first found in the nineteenth century, according to the Oxford Dictionary, although the verb *disorient* is found in the seventeenth. The verb *orient* dates back to the eighteenth century in its original sense of placing or arranging anything, especially a church, so as to face the east (from the French *orienter* to place facing the east, from *orient* east, an adaptation of the Latin *oriens, orient-em* rising sun, east, the

present participle of *orīrī* to rise). Hence the word came in the nineteenth century to mean "to ascertain the position of anything in relation to the points of the compass, to determine the bearings of"; and so, figuratively, "to adjust or bring into defined relations to known facts or principles; also, to ascertain one's 'bearings,' find out 'where one is.'"

PARANOIA.—Modern Latin, adopted from the Greek παράνοια formed on παράνο-ος distracted, beside one's self, out of one's mind, from παρά beside+νοῦς, νο-ος mind. The word in Greek is only one of several terms applied to mental derangement—terms difficult to interpret because apparently intended to convey distinctions of which we can form only an approximate idea and for which in any case we have no words. Analogous to παράνοια, for example, is παραφροσύνη, the condition of being παράφρων (Latin *demens*) out of one's mind (παρά+φρήν); and also the later παραφρόνησις from the verb παραφρονεῖν to be beside one's self, to be deranged or mad. The adjective παραπλήξ (whence our *paraplegia*) was sometimes used metaphorically for παράπληκτος mad; both these words, as well as most of the others here cited, occur in the Hippocratic writings. The Greeks had still another word for *madness:* λύσσα, a word which occurs in the Iliad in the sense of "a kind of Berserker rage" which affects Hector and later Achilles. In the *Hercules furens* of Euripides, Hera sends against Hercules a demon Λύσσα as a result of which Hercules is seized with a fit of maniacal excitement, accompanied by delusions of persecution. In late writers, medical and other, λύσσα (or λύττα) is the technical term for *hydrophobia;* and *lyssa* is sometimes used in English for that disorder. The origin of the Greek word is from λυκ-ια meaning *wolf-disease* (λύκος wolf); the latter word is seen also in *lycanthropy* (λυκανθρωπία), a kind of madness in which the patient had the ravenous appetite and other qualities of a wolf.

PARAPHRENIA.—Formed on the analogy of other words in *-phrenia;* or related to παράφρων (see above). The word was introduced by Kraepelin in the eighth edition of his *Psychiatrie* (vol. 3, 1913).

PERSEVERATION.—Adoption of the French *perseveration* (thirteenth century), an adaptation of the late Latin *persevērātiōn-em,* noun of action formed on *persevērare* to continue, persist, adhere

to strictly, related to the adjective *persevērus* very strictly, from *per* (intensive) + *sevērus* strict, severe. The word was formerly used (seventeenth century) as apparently identical with our present word *perseverance,* which is from the classical Latin *perseverantia,* having the same meaning as the later *perseveratio.*

PHOBIA.—Adopted from the Greek φοβία fear. The latter also formed abstract substantives from adjectives in -φοβός with the sense " dread, horror " ; as in ὑδροφοβία a horror of water, hydrophobia. Hence the modern words formed in English by analogy, some of them in imitation of French forms in *-phobie.* Thus *agoraphobia* and *claustrophobia,* which apparently first occur in the translation of Max Nordau's *Degeneration* (1895) ; together with numerous words of modern formation, such as *syphilophobia,* etc.

PRESBYOPHRENIA.—Formed from the Greek πρέσβυς an old man ; seen also in *presbyopic* and likewise in *presbyter* and *Presbyterian* (from πρεσβύτερος older, elder). For *-phrenia* see *Hebephrenic.*

PSYCHE.—Greek ψυχή literally, breath ; from ψύχειν to breathe, to blow ; later and more commonly, to make cool or cold, to cool. Hence, *breath,* especially as the sign of life (Latin *anima,* which went through a similar evolution—from that which blows, air, breath, to the breath of life, the vital principle—finally a creature endowed with *anima,* a living being) ; whence the life, the animating principle, the soul or spirit, in distinction from its material vehicle, the σῶμα or body (Latin *animus,* the rational soul in man, as opposed to the body and to the physical life, *anima;* by distinguishing between *anima* and *animus,* the Romans took a step in advance of the Greeks, who to a certain extent used ψυχή for both these ideas ; one may note in passing that *animus* is the same word as the Greek ἄνεμος wind, as seen in our word *anemone* or windflower). In Homer, the word which corresponds more nearly to our *soul* (*Lebensseele*) is θυμός ; and in this writer ψυχή meant rather the departed spirit or ghost, a sort of dematerialized replica of the corpse, a mysterious quasi-physical double (*Totengeist*) which, when released by the death of the body, fled to Hades and lived thenceforward a shadowy existence in the underworld (much as among the pre-exilic Jews). And, with some modification, this conception of ψυχή persisted in Athens up through the sixth and

fifth centuries B. C. The fifth century scientific schools of Ionia, however, on the basis of the doctrine of Anaximenes that "air" (ἀήρ), the primary substance, was the life of the world, held that (in the words of Professor Burnet) "the individual human soul was merely that portion of the boundless air which happens to be shut up in our body for the time being, and which accounts for our life and consciousness. There is a great advance here," says Burnet, "in so far as ψυχή is identified for the first time with the normal walking consciousness and not with the dream consciousness"; but, he adds, "what they called by that name was something extrinsic and dissociated from the normal personality." It was left for Socrates (470-399 B. C.) to say that the normal consciousness was the true self, identifying ψυχή with "whatever it is in us that has knowledge or ignorance, goodness or badness" (*Crito*). By uniting the Orphic doctrine of the purification of the fallen soul with the scientific view of the soul as the waking consciousness, Socrates "reached the idea best rendered in English by the old word 'spirit.' In that sense, and to that extent, he was the founder of philosophy." This designation of ψυχή, as that which exists independently after death as the bearer of the personality, is preserved in the New Testament, excepting only in the Pauline epistles, and by the Neo-Platonist Plotinus (204-270 A. D.), the last great example of the Greek genius, who held that ψυχή, the individuality preserved after death, is an immortal nature clad in the garment of mortality: "something of us passes over to dissolution and destruction, while something else, that which is the true man, endures for ever"—τὰ δὲ μένει εἰς ἀεί, ἅπερ ἐστιν αὐτός (*Enneads* iv, 7, 1).

PSYCHIATER.—First found, according to the *Oxford Dictionary*, in Dunglison's *Medical Lexicon* (1857), where it is defined as a "Mad-doctor."

PSYCHIATRIST.—The *Oxford Dictionary* states that this word is first to be found in English in the Century Dictionary of 1890.

PSYCHIATRY.—The word is first found, according to the *Oxford Dictionary*, in Worcester's Dictionary of 1846; and *psychiatrics* (also *psychiatric*) in 1847 in the translation of Feuchtersleben's *Medical Psychology*. The second part of the word (*cf. geriatrics, pediatrics, podiatry*) is derived from ἰατρεία healing, medical treatment, formed on ἰατρός healer, physician, which is related to the

verb ἰάομαι I heal or cure. The root of the last is uncertain; but Giles has suggested that it is in all probability connected with ἰός poison (Latin *virus*), and that the development of meaning in ἰάομαι is an early example of the principle *similia similibus curantur*. He suggests that the Greeks, who are known to have used poisoned weapons, held, with that belief in sympathetic magic which is found all over the world, that a similar preparation was the best antitoxin.

As to our word *physician*, Singer says that the word φυσικός, though it passed over into the Latin with its original meaning *naturalist* (φύσις nature; whence our *physics, physiology*, etc.), acquired the connotation of *sorcerer* among the later Greek writers: "perhaps the word *physicianus* was introduced to make a distinction from the charm-mongering *physicus*. In later Latin *physicus* and *medicus* are almost always interchangeable."

A definition of *psychiatry* is perhaps uncalled for here; but one is sometimes tempted to define it, as Bertrand Russell has defined mathematics, as "the subject in which we never know what we are talking about, nor whether what we are saying is true."

PSYCHOGENESIS.—Formed on *psycho* (reproducing the Greek ψυχο-, ψυχ- combining form of ψυχή) + *genesis*, representing the Greek γένεσις origin, creation; allied to γίγνεσθαι to be born. According to MacCurdy, "psychogenesis, as applied to the psychoses, and in its modern sense, begins definitely with a brief analysis of a case of what Freud then called 'Chronic Paranoia,' but which he would doubtless diagnose today as dementia precox" (*Analyse eines Falles von chronischer Paranoia*—1896).

PSYCHOPATHY.—*Psycho* (as above) + παθειά, from πάθος suffering (whence our *pathos, pathology*, etc.). According to the *Oxford Dictionary, psychopathy, psychopathic* and *psychopathology* are first found in English in the translation of Feuchtersleben's *Medical Psychology* (1847); *psychopath* in 1885. One may note the perversion of etymological sense seen in such words as *homeopathy, homeopath, naturopathy*, etc., as contrasted with *psychopathy* and *psychopath, encephalopathy* (ἐγκέφαλος brain), *cardiopathy*, etc.

PSYCHOTHERAPY.—*Psycho* + θεραπεία medical treatment.

PSYCHOSIS.—Adopted from the Greek ψύχωσις animation, principle of life; formed on ψυχόω I give soul or life to (*cf.* ψύχω I breathe); but in modern usage taken as referring to the condition

of the psyche or mind. The word has been used to signify a change in the psychic state, in consciousness (as by Huxley in 1871). In the sense of "any kind of mental affection or derangement," the word first occurs, according to the *Oxford Dictionary*, in the English translation of Feuchtersleben (1847), where *psychiatry* is defined as "the nosography which aims at exhibiting the phenomena and the natural history . . . . of psychoses."

The suffix *-osis* deserves some comment on account of its frequency in medical terminology. It represents the Greek -ωσις, -σις, whereby verbal nouns of action or condition were formed either from verbs in ό-ω derived from adjectives in ο- (as for example ἀμαύρωσις darkening, obscuration of sight, amaurosis, from ἀμαυρό-ω to darken, from ἀμαυρός dark), or without the intervention of a verb in ό-ω (as ἐξόστωσις exostosis, from ἐξ+ὀστέον). Many Greek terms such as these have been adopted in Latin ancient or modern, whence into English (as *sclerosis, thrombosis*). On the analogy of these, others have been freely formed in English and other modern languages, either from Greek elements (as *chlorosis, cyanosis, ichthyosis, trichinosis*) or (less frequently) from the Latin (as *pediculosis, tuberculosis*).

RATIONALIZE.—*Rational+-ize; rational* being an adaptation of the Latin *ratiōnālis,* from *ratiōn-em* reckoning, account, understanding; formed on *rat-,* the participial stem of *rērī* to think, reckon (seen also in our words *ratio, ration, reason*). In its ordinary sense of "to render conformable to reason, to explain on a rational basis," it is first found in 1817 (in Coleridge). In psychiatry it has, of course, the somewhat more specific sense of "to invent a more or less plausible or reasonable basis or motive for opinions, desires or behavior, of the real or actual motive of which the subject is unconscious"—a mental mechanism, it may be mentioned, of which Spinoza was fully aware. One is reminded, too, of a passage in Nietzsche's *Die fröhliche Wissenschaft* (1882): "Perhaps the *belief* in this or that motive, and therefore that which mankind has assumed and imagined to be the actual mainspring of its activity hitherto, is something still more essential for the thinker to know. For the internal happiness and misery of men have always come to them through their belief in this or that motive—*not,* however, through that which was actually the motive!"—a thought faintly reminiscent of the saying of Democritus (fifth century,

B. C.) that "Men put the blame on fortune, but that is only an 'image' they have invented to excuse their own ignorance" (*ἄνθρωποι τύχης εἴδωλον ἐπλάσαντο πρόφασιν ἰδίης ἀβουλίης—Fragment* 119). Euripides also gives us a pretty example of rationalization (and of projection) of a disowned or unacceptable wish in the words of Hecuba to Helen in the *Trojan Women:* ". . . . Do not make goddesses fools, to gloss the evil that is in yourself: the wise will hardly be convinced! Aphrodite, you say, came with my son to Menelaus' house. How laughable! . . . . When you saw him, it was your own thought that became 'Aphrodite.' 'Aphrodite' is the name for every human folly."

Regression.—Adaptation of the Latin *regressiōn-em,* noun of action from *regredī* to go back, formed on *rē* back + *gradī* to go. The verb *regress,* to recede or return into a former state, dates back to the sixteenth century; the noun *regression* is said by the *Oxford Dictionary* to be found for the first time in this sense in the *Pseudodoxia Epidemica* of Sir Thomas Browne (1646). MacCurdy has pointed out that "no professional psychologist has ever described regression in better terms than did George Meredith in his novel, *Evan Harrington:* 'We return to our first ambitions as to our first loves: not that they are dearer to us—quit that delusion: our ripened loves and mature ambitions are probably closer to our hearts, as they deserve to be—but we return to them because our youth has a hold on us which it asserts whenever a disappointment knocks us down'"; although, MacCurdy adds, regression may be occasioned, psychiatrically speaking, by "two other general factors in addition to that of failure in the mature adaptation"—a somatic factor, as in physical disease or old age, or a psychological factor, as when something occurs which "stimulates an unconscious tendency directly." Regression is, of course, a phenomenon manifested in every possible degree, from the normal regression of a summer vacation or the night's sleep to the deep regression of the severe stupor reaction. Whether or not one happens to regard an essential difference between dementia præcox and manic-depressive psychosis as consisting of a difference in the degree and type of regression, it might almost be held that, just as the doctrine of repression has been called (by Freud) the foundation stone on which the whole structure of psychoanalysis

rests, so the principle of regression is the foundation stone on which the whole structure of psychiatry rests.

REPRESSION.—Probably an adaptation of the French *répression* (found in the fifteenth century), formed on *reprimĕre,* from *rē* back+*premĕre* to press. *Repression* first occurs in English in the sixteenth century, but the verb *repress* dates back to the late fourteenth century. Freud, as I have already said, has called the doctrine of repression "the foundation stone on which the whole structure of psychoanalysis rests, the most essential part of it." Rank has pointed out that the first specific formulation of the idea connoted by this word is to be found in Schopenhauer in *The World as Will and Idea* (1818): "The exposition of the origin of madness . . . . will become more comprehensible if it is remembered how unwillingly we think of things which powerfully injure our interests, wound our pride, or interfere with our wishes; with what difficulty do we determine to lay such things before our own intellect for careful and serious investigation; how easily, on the other hand, we unconsciously break away or sneak off from them again; how, on the contrary, agreeable events come into our minds of their own accord . . . . . In that resistance of the will to allowing what is contrary to it to come under the examination of the intellect lies the place at which madness can break in upon the mind. Each new adverse event must be assimilated by the intellect, *i. e.,* it must receive a place in the system of the truths connected with our will and its interests, whatever it may have to displace that is more satisfactory. Whenever this has taken place, it already pains us much less; but this operation itself is often very painful, and also, in general, only takes place slowly and with resistance. However, the health of the mind can only continue so long as this is in each case properly carried out. If, on the contrary, in some particular case, the resistance and struggles of the will against the apprehension of some knowledge reaches such a degree that that operation is not performed in its integrity, then certain events or circumstances become for the intellect completely suppressed, because the will cannot endure the sight of them, and then, for the sake of the necessary connection, the gaps that thus arise are filled up at pleasure; thus madness appears. For the intellect has given up its nature to please the will: the man now imagines what does not exist. Yet the madness which has thus arisen is now the

Lethe of unendurable suffering; it was the last remedy of harassed nature, *i. e.*, of the will." (3d ed., Vol. III, pp. 168, 169; *tr.* Haldane.)

SADISM.—Taken from the name of the French novelist, Donatien Alphonse François, Comte de Sade, commonly known as Marquis de Sade (1740-1814), whose books constitute, says Havelock Ellis, "a sort of encyclopedia of sexual perversions, an eighteenth century *Psychopathia sexualis.*" But these perversions cover a much wider range than that included in the term *sadism* as ordinarily employed. (It is said that Petrarch's Laura belonged to the de Sade family, but this statement has been subjected to question.)

SCHIZOID.—The frequent suffix *-oid* (as in *hypnoid, schizoid, syntonoid,* etc.; *syntoid* is as objectionable as *narcism*) deserves mention in passing. Forming adjectives, but also substantives, it means "having the form or likeness of," "like," being derived from *-o-* of the preceding element or as a connective + *-ειδής*, from *εἶδος* form. (*Cf.* the Latin *-i-formis,* as in our *epileptiform,* etc.) Thus *ἀνθρωποειδής* of human form, anthropoid; similarly *rhomboid, spheroid, ovoid,* etc. In other modern languages the *o* and *i* make distinct syllables (French *anthropoïde,* German *anthropoïd*), but the prevalent pronunciation in English is with the diphthong (*oi*) as in *void.*

SCHIZOPHRENIA.—The first part of the word represents the Greek *σχίζειν* to split, as seen in our words *schism, schizogony, schizomyces,* etc. (*Cf.* the German *Spaltungsirresein.*) The word itself we owe to Bleuler, who, in his *Dementia Præcox oder Gruppe der Schizophrenien* (1911), expresses his regret for the necessity of coining a term which shall be at once more convenient and more expressive of the essential nature of dementia præcox: "Leider konnten wir uns der unangenehmen Aufgabe nicht entziehen, einen neuen Namen für die Krankheitsgruppe zu schmieden. Der bisherige ist zu unhandlich. . . . . Der alte Name is gebildet worden zu einer Zeit, da sowohl der Begriff der Dementia wie der der Präcocitas auf fast alle einbezogenen Fälle anwendbar war . . . . Ich nenne die Dementia præcox *Schizophrenie,* weil, wie ich zu zeigen hoffe, die Spaltung der verschiedensten psychischen Funktionen eine ihrer wichtigsten Eigenschaften ist . . . . . Mit dem Namen der Dementia præcox oder die Schizophrenie bezeichnen

wir eine Psychosengruppe, die bald chronisch, bald in Schüben verläuft, in jedem Stadium Halt machen oder zurückgehen kann, aber wohl keine volle Restitutio ad integrum erlaubt. Sie wird charakterisiert durch eine spezifisch geartete, sonst nirgends vorkommende Alteration des Denkens und Fühlens und der Beziehungen zur Aussenwelt." (pp. 4, 5, 6).

STEREOTYPY.—Adaptation of the French *stéréotypie,* from the adjective *stéréotype;* formed on the Greek στερεός solid+τύπος type.

STUPOR.—Adopted from the Latin *stupor,* literally, numbness, dulness; especially dulness in the sense of stupidity, stolidity; related to the verb *stupēre* to be stunned or benumbed, to be astonished or amazed; *cf.* the Greek στύπος, Latin *stipes,* a block, stump; *cf.* also the Latin *stupid-us.* The word is found as early as 1398 in the sense of "a state of insensibility or lethargy": it first occurs in the seventeenth century in the more medical sense of "a disorder characterized by great diminution or entire suspension of sensibility."

SUBLIMATE.—Formed on the Latin *sublimat-,* past participial stem of *sublimāre* to sublime, from the adjective *sublimis* sublime, probably from *sub* in the sense of "up to"+*limen* lintel, threshold (as in our *subliminal*). The word is first found in English in the seventeenth century.

SUGGESTION.—The word dates from the fourteenth century; adopted from the Old French *suggestioun,* an adaptation of the late Latin *suggestio* hint, intimation, suggestion, noun of action from *suggerere* literally "to carry, bring, put or lay under" (*sub*+*gero*), with the derived meaning of "to advise, prompt, bring to mind, suggest." *Suggestible* and *suggestibility* are words first found toward the end of the nineteenth century.

SYMBOL.—Adaptation of the late Latin *symbolum* (partly through the French *symbole,* which appears in the sixteenth century), adopted from the Greek σύμβολον mark, ticket, token.

SYNTONIC.—A word of Bleuler's coinage (1922), formed on σύν with, together+τόνος tone. "Ich schlage deshalb [in place of the "*cyclothym*" of Kretschmer] das weniger missverständliche '*synton*' vor, das nicht nur 'gleichgespannt,' sondern auch 'zusammentönend,' 'gleichgestimmt,' 'übereinstimmend' bedeutet." Note that "damit möchte ich ausdrücken, dass die Affektivität des

(vorwiegend) synton Reagierenden nach aussen mitklingt mit der der umgebenden Menschen und den Verhältnissen der Aussenwelt entspricht, und dass zugleich die aktuellen Gefühle alle innerlich zusammenklingen und wie die Strebungen einheitlich sind." (Bleuler: Die Probleme der Schizoidie und der Syntonie—*Z. f. d. ges. Neurol. u. Psychiat.*, 1922, 78, 373.)

UNCONSCIOUS.—*Un-*, prefix expressing negation, representing the Anglo-Saxon *un-*,+*conscious*. Though the word is cited as first occurring in English in 1712, its meaning of "not realized or known as existing in oneself," "not attended by or present to consciousness; performed, employed, etc., without conscious knowledge" seems to have been a development of the nineteenth century. It would be interesting, though beyond the scope of this essay, to trace the history of the present-day concept of the *unconscious* as employed in Psychiatry. Northridge, in his recent book, states that "philosophers did not seriously concern themselves with the study of the unconscious earlier than the eighteenth century"—a study which had its actual inception with Descartes (1596-1650) and especially Leibnitz (1646-1716). Nevertheless it is interesting to note certain gropings in this direction to be found in the writers of antiquity. In one of his dirges, Pindar (fifth century B. C.) speaks of an "image of life," (*αἰῶνος εἴδωλον*) which "sleeps when the limbs are active" (*εὕδει δὲ πρασσόντων μελέων*) and shows its prophetic nature only in dreams, being quite dissociated from the normal waking consciousness. In the *Troades* of Euripides it is said to the infant Astyanax, when about to die: "Thou sawest them and didst mark them in thy *ψυχή*, but thou knowest them not"; of which Burnet says that this seems to be the only place where knowledge is ever ascribed to the *ψυχή*, and it is expressly denied to be knowledge, being rather the vague awareness of early childhood which leaves no trace in the conscious memory. Moreover, certain of the less articulate emotions are referred to the *ψυχή*; "anxiety and depression have their seat in the *ψυχή*, and so have all unreasoning terrors and dreads." Finally, one thinks of the well-known passage in Plato's *Republic* (571, 572): "I mean these appetites which are awake when the reasoning and human ruling power is asleep . . . . but the point which I desire to note is that in all of us, even in good men, there is a lawless wild-beast nature, which peers out in sleep." (*Tr.* Jowett.)

HEREDITY RELATIONS IN SCHIZOPHRENIA.*

By ALBERT M. BARRETT, M. D.

The importance of heredity as a factor concerned in the etiology of schizophrenia has long been recognized. It has, however, been given less emphasis than in connection with some other psychoses, in particular those of the manic depressive group. In comments in textbook discussions of the etiological relations of schizophrenia, it has been variously stated that an hereditary taint of some sort is to be found in from 50 to 90 per cent of cases of this disorder. Kraepelin,[1] in a study of 1054 cases of schizophrenia, found that mental abnormalities and factors, commonly considered as of importance in genetic relations in the psychoses, occurred in 53.8 per cent of their families. Bleuler,[2] basing his figures upon the results of the study of Wolfsohn [3] on schizophrenic patients of the Burghölzli clinic, gives a hereditary tainting of 90 per cent.

Such estimates can only have a useful significance if they are interpreted in comparison with the total hereditary tainting of the non-psychotic and psychotic of other clinical types. The best available data from which such comparisons can be made are in the well-known statistical studies of Koller [4] and Diem,[5] which deal with the heredity relations in the non-psychotic and psychotic. In respect to comparisons with heredity relations in other psychoses, there are available a series of studies, based on the methods of Koller and Diem, for paresis, by Kalb,[6] for epilepsy, by Snell [7] and for manic depressive psychoses, by Sünner.[8]

In spite of the warranted criticisms that have been made on the methods and criteria used in the Koller and Diem compilations, these furnish a basis for the analysis of clinical groups of mental disorders that can give much that is of value in gaining an insight into certain aspects of genetic relationships. This is recognized by Rüdin [9] in his comment that "until we have a series of statistics, compiled from modern viewpoints, we must use those of Koller and Diem which give in general such plausible results that the truth does not lie far off."

* Read before the Association for Research in Nervous and Mental Diseases, December 28, 1925.

In order to gain a comparative insight into the frequency and types of heredity relationships that exist in schizophrenia and the distribution of these in family lines, we have studied a series of 150 consecutive admissions of cases of schizophrenia to the clinic at Ann Arbor. These have been compiled and analyzed after the method of Diem and have been brought into comparison with the results of similar compilations for paresis, epilepsy and manic depressive psychoses. Although the series is not large, it is believed that the figures would not differ markedly if the total number were greater.

TABLE I.

HEREDITARY TAINTING IN 150 CASES OF SCHIZOPHRENIA.

(Only the nearest tainting factor counted.)

150 cases of Schizophrenia (Barrett)	Direct		Atavistic	Collateral	Siblings	Total	Percentage					
	Direct						Direct		Atavistic	Collateral	Siblings	
	Father	Mother					Father	Mother				
Psychoses..	11	11	10	13	4	49	7.33	7.33	6.67	8.67	2.67	32.67
Nervous diseases..	2	..	2	..	..	4	1.33	....	1.33	....	....	2.66
Alcoholism.	14	..	4	1	..	19	9.33	....	2.67	.67	....	12.67
Apoplexy ..	1	..	14	2	..	17	.67	....	9.33	1.33	....	11.33
Senile dementia.	..	..	1	..	..	1	....	....	.67	....	....	.67
Abnormal character.	9	4	3	6	3	25	6.	2.67	2.	4.	2.	16.67
Suicide	..	..	1	1	..	2	....	....	.67	.67	....	1.34
Total....	37	15	35	23	7	117	24.66	10.	23.34	15.34	4.67	78.01

In Table I are shown the character and distribution of the heredity tainting in 150 cases of schizophrenia. In this only the nearest tainting factor is considered. Following the method of Diem, where tainting occurs in both paternal and maternal lines, that of the father is chosen. In the selection of the family relationship in which the taint occurs, the order of precedence is direct, atavistic, indirect and siblings. Where different tainting factors occur in the family or in the same individual, the order of precedence is psychoses (including feeblemindedness, epilepsy and psychoneuroses), suicide, abnormal character, nervous diseases, alcoholism and apoplexy.

TABLE II.

HEREDITY FACTORS AND DISTRIBUTION.

	Psychoses	Psychoses	Nervous diseases	Alcoholism	Apoplexy	Senile dementia	Abnormal character	Suicide	Total factors	Line of heredity
Non-psychotic conditions, 1193. (Diem).	Direct	35	86	138	83	21	75	6	444	33
	Atavistic	33	22	74	163	97	57	6	452	29
	Collateral	144	75	146	93	25	190	12	685	
	Siblings	82	108	55	19	1	92	7	364	5
	Total heredity	294	291	413	358	144	414	31	1945	....
	Per cent	15.1	14.9	21.3	18.4	7.4	21.3	1.6	100	67
3515—Psychotic conditions (Koller and Diem).	Per cent	.....	.....	.....	.....	.....	.....	.....	.....	50–57
	Heredity	.....	.....	.....	.....	.....	.....	.....	.....	12–16
	Factors	45.9	5.1	20.9	5.5	1.4	18.8	2.3	.....	7–9 69–82
205—Paresis (Kalb.)	Direct	10	6	13	17	2	10	3	61	27.3
	Atavistic	8	1	8	28	4	1	1	51	30.7
	Collateral	19	8	3	20	1	3	5	59	
	Siblings	22	9	7	....	....	10	2	50	9.7
	Total heredity	59	24	31	65	7	24	11	221	....
	Per cent	26.7	10.9	14.0	29.4	3.2	10.9	4.9	100	67.7
352—Epilepsy (Snell).	Direct	21	60	95	19	1	38	3	237	59.09
	Atavistic	19	13	16	12	1	9	....	70	16.77
	Collateral	45	25	11	1	1	10	9	102	
	Siblings	28	44	8	1	....	10	2	93	5.4
	Total heredity	113	142	130	33	3	67	14	502	....
	Per cent	22.51	28.28	25.89	6.57	0.59	13.34	2.79	100	81.26
650—Manic depressive (Sünner).	Direct	151	136	77	70	18	72	11	535	65.53
	Atavistic	60	27	11	51	13	19	5	86	14.76
	Collateral	128	28	17	6	2	18	18	217	
	Siblings	143	75	3	3	0	18	19	261	4.76
	Total heredity	483	266	108	130	33	127	53	1199	....
	Per cent	43.86	15.10	9.8	11.8	3.0	11.5	4.8	100	84.13
150—Schizophrenia (Barrett).	Direct	27	2	14	1	....	14	....	58	34.66
	Atavistic	16	4	8	27	3	10	2	70	38.68
	Collateral	58	6	7	12	2	15	6	106	
	Siblings	17	1	2	....	....	19	....	39	4.67
	Total heredity	118	13	31	40	5	58	8	273	....
	Per cent	43.22	4.76	11.36	14.65	1.83	21.24	2.93	100	78.01

In Table I it is shown that in this series of cases of schizophrenia there is a total heredity tainting of 78.01 per cent. Of all tainting factors, psychoses represent 32.67 per cent. Nervous diseases occur in a percentage of 2.66; alcoholism in 12.67 per cent; apoplexy in 11.33 per cent; abnormal character in 16.67 per cent; suicide in 1.34 per cent and senile dementia in 0.67 per cent.

In respect to the distribution of the factors among the family relationships, the tainting factor was in the father in 24.66 per cent of instances and in the mother in 10 per cent. This amounts to a direct tainting of 34.66 per cent. Tainting factors occur in collateral lines in 15.34 per cent and in the siblings in 4.67 per cent.

Table II is a compilation from the tables of Koller and Diem, in which have been included heredity studies on several groups of psychoses and our own statistical study of a series of 150 cases of schizophrenia. In this table all heredity factors are counted, and in this respect the table differs from Table I in which only the nearest tainting factor was considered.

The percentages showing the total heredity tainting in the last column are taken from the compilation in Table I. It was there shown that the total heredity tainting in schizophrenia was 78.01 per cent. This figure is about equal to that of the tainting in undifferentiated psychoses (69, Koller and 82, Diem) and considerably larger than that for the non-psychotic, 78.01 : 67. Compared with the total tainting in manic depressive psychoses, that in schizophrenia is a little less, 78.01 : 84.13. It is less than in epilepsy, 78.01 : 81.26.

The tainting with psychoses occurs in a percentage of 43.22, This is about the same as in the undifferentiated psychoses, 43.22 : 45.9, and is about equal to that found by Sünner in manic depressive psychoses (43.86). Heredity tainting with psychoses is about three times greater in schizophrenia than in the non-psychotic (15.1). It is much greater than Kalb found in paresis (26.7) and Snell in epilepsy (22.5).

The tainting with nervous diseases (4.76) is a little less than for the undifferentiated psychoses and about one-third as great as in manic depressive psychoses (15.1). It is about one-sixth as great as has been found in epilepsy, 4.76 : 28.28. Alcoholism is a little more frequent than in manic depressive psychoses, 11.36 : 9.8, but much less than in other psychoses and in the undifferentiated psychoses.

Senile dementia is about as frequent a tainting factor as in the undifferentiated psychoses but is much less than occurs even in the non-psychotic.

While abnormal character is not more frequent in occurrence than in the non-psychotic, 21.24: 21.3, it is much greater than in any of the other psychoses. It is nearly twice as frequent as in manic depressive psychoses, 21.24: 11.5, and somewhat more than in the undifferentiated psychoses, 21.24: 18.8.

The frequency of suicide is about equal to that in the undifferentiated psychoses, 2.9: 2.3.

From the foregoing analysis the conclusion seems warranted that heredity is of importance in the etiology of schizophrenia; that psychoses occur in the families of schizophrenic individuals in far greater frequency than in those of the non-psychotic, and about as frequently as in the families of cases of manic depressive psychoses, a disorder in which it has generally been accepted that heredity has an important rôle; that the most frequent tainting factor, aside from psychoses, is abnormal character which occurs in schizophrenic families more frequently than in manic depressive psychoses, epilepsy and paresis.

TABLE III.

NUMBER OF TAINTED PATIENTS SHOWING PROPORTION OF TOTAL TAINTED IN THE NON-PSYCHOTIC, PSYCHOTIC, PARETIC, EPILEPTIC, MANIC DEPRESSIVE AND SCHIZOPHRENIC GROUPS, THROUGH THE DIRECT, INDIRECT AND SIBLING LINES.

(Only the nearest tainting factor noted.)

	Non-psychotic conditions	Psychotic conditions	Paretic conditions	Epileptic conditions	Manic-depressive conditions	Schizophrenic conditions
Direct Tainting:						
Father } Mother }	33	50–57	27.3	59.09	65.53	34.66
Indirect Tainting:						
Grandparents } Uncles } Aunts }	29	12–16	30.7	16.77	14.76	38.68
Sibling tainting	5	7–9	9.7	5.4	4.76	4.67
Total	67	69–82	67.7	81.26	85.05	78.01

In Table III are compiled the data which show the distribution among family relationships of the tainting factors. This shows that the tainting in schizophrenia is heaviest in the indirect lines (38.68). This is much greater than occurs in the undifferentiated psychoses (12, Koller and 16, Diem) or in any of the other types of psychoses in which this question has been studied. It is more than two and one-half times greater than in the manic depressive psychoses. Direct tainting is far less than in the undifferentiated psychoses and about one-half as great as in manic depressive psychoses. The tainting of siblings of schizophrenic patients is about one-half as great as in the undifferentiated psychoses and about equal with that in manic depressive psychoses.

It must be borne in mind that in this compilation only the nearest tainting factor is considered. As both direct and indirect occurrences are considered in precedence over the sibling line, where either of these lines shows a tainting abnormality, no siblings would be counted.

A better impression of the amount of family tainting can be gained from a compilation of the total amount of tainting in the different family lines, rather than the consideration of the nearest tainting factor alone. This is given in Table IV in which are considered the frequency and distribution of all tainting factors occurring in the series of 150 schizophrenic patients; *e. g.*, in the families of schizophrenic patients 21.25 per cent of tainting factors occurred in the parents.

TABLE IV.

PROPORTION OF ALL TAINTING FACTORS IN THE DIRECT, ATAVISTIC, INDIRECT AND SIBLING LINES. ALL TAINTING FACTORS GIVEN IN PERCENTAGES.

(All tainting factors counted.)

	Non-psychotic conditions	Psychotic conditions	Paretic conditions	Epileptic conditions	Manic-depressive conditions	Schizophrenic conditions
Parents	22.8	43.7	27.6	47.21	44.62	21.25
Grandparents	23.8	9.8	22.2	13.94	15.51	25.64
Uncles and aunts.....	35.1	16.1	26.7	20.32	18.09	38.83
Brothers and sisters.....	18.8	30.4	23.1	18.53	21.76	14.29

It can be seen in Table IV that tainting of the parents with mental abnormalities is much less than in the undifferentiated psychoses, 21.25 : 43.7. It is about one-half as great as in manic depressive psychoses, 21.25 : 44.62, and much less than in epilepsy, 21.25 : 47.21.

Schizophrenic patients are more tainted in the atavistic line than are those who have manic depressive psychoses, 25.64 : 15.51. Atavistic tainting is more than two and one-half times greater than in the undifferentiated psychoses, 25.64 : 9.8.

In indirect relationships (*i. e.*, uncles and aunts) schizophrenic patients are more heavily tainted than in any other type of psychosis (38.3). This is more than twice as great as in manic depressive psychoses, 38.3 : 18.09, and much greater than in the undifferentiated psychoses, 38.3 : 16.1.

Total tainting factors occur less frequently in the brothers and sisters of schizophrenic patients (14.29) than in any other type of psychoses.

The conclusion that seems warranted from the foregoing analysis is that indirect heredity tainting is far greater than direct, and is an important fact to be considered in the interpretation of the heredity course of this disorder. This is in agreement with the results of most investigators who have considered this question. It is supported by the results of studies of individual families where it has been most frequently found that schizophrenic patients come from parents who do not have this disorder (Rüdin[9]). This predominance of abnormalities in the indirect lines and the relatively high frequency of psychoses and mental abnormalities in grandparents, harmonizes with the theories that have been developed from mendelian studies of the heredity course of schizophrenia. These in general tend to indicate that the heredity course in schizophrenia follows that of a recessive mode of transmission.

Mendelian Relations.

The application of mendelian theories and methods in investigations of the heredity course of schizophrenia has been chiefly concerned with the problem of whether or not the anlage to schizophrenia is transmitted in a dominant or recessive mode. The results of these seem to show a general agreement that whatever the factor may be that is transmitted, this tends to follow the

mode of a mendelian recessive character Rüdin,[9] Hoffman,[10] Kahn,[11] Kretschmer,[12] Oberholzer [13] and Rosanoff.[14]

The most critical study of this question is that of Rüdin,[9] who found the following evidence of a recessive course:

1. Of 81 children of 20 old schizophrenic individuals, not more than 2 or 3 developed schizophrenia.

2. The continuous occurrence of schizophrenia over two generations must be extremely rare. This did not occur in his own material and he was not familiar with any instance of this in the literature.

3. The rule of dominance that where a family is once free from the schizophrenic characteristic it is always free does not hold good in some schizophrenic families. In these instances collateral heredity may have an influence.

4. It is most frequent to find schizophrenia where the parents do not have this disorder. This is contrary to a dominant course. It is usual for a break to occur in the direct line of transmission and the schizophrenia to reappear in descendants from parents free from the disorder. This is characteristic of a recessive course.

Whatever the nature of the factor may be that is transmitted to produce the anlage to schizophrenia, it seems that it must be a complex rather than a simple mendelian character. From the study of the proportional frequency with which schizophrenia occurs among children of non-schizophrenic parents, Rüdin has found that only about one-sixteenth of the total number of children developed the disorder. If the crossing results were those occurring in the transmission of a simple or monohybrid character, it would be expected that at least one-fourth of the children would be schizophrenic. From this Rüdin comments "the fact that the percentage obtained lies near one-sixteenth makes it possible that the crossing mode follows that of a dihybrid character. This suggests that in the production of the anlage to schizophrenia two concurring pairs of characters are active."

In a dihybrid crossing where two concurring pairs of characters are present, there are 16 possibilities of theoretical combinations into genotypes. In the recessive heredity course of schizophrenia one of these genotypes would be free from factors concerned in producing the anlage to schizophrenia and one would appear as the phenotype schizophrenia. The remainder would form anlagen

which would not outwardly appear as schizophrenia, but each would possess part of the factors concerned in the production of the schizophrenic anlage. How these factors would be clinically manifested is not known, but Rüdin suggests that it would be a fruitful field for investigation to ascertain whether or not they are manifested as qualities which characterize the abnormal individuals and psychopaths that are to be found in the families of schizophrenic individuals.

Genetic Relations of Abnormalities of the Character.

In addition to the occurrence of well differentiated clinical forms of psychoses in the families of those who have schizophrenia, it has long been appreciated that there occur in these families individuals who are otherwise definitely abnormal in their mental qualities.

The significance of such abnormal qualities of character for the genetic relations of schizophrenia has, within recent years, become a subject of much interest. This has led to the formulations of certain theoretical conceptions as to the genotypic structure of this disorder (Berze,[15] Medow,[16] Elmiger[17]). From the similarity of many of these abnormalities to qualities observed in the pre-psychotic character of schizophrenic individuals and their frequent occurrence among members of schizophrenic families, it has been suggested that these may be in a genotypic relation to the development of schizophrenia.

In our own series it was found that abnormal character occurred as 21.24 per cent of the tainting factors in schizophrenia. This frequency is much greater than in the heredity tainting of other psychoses and nearly twice as great as occurs in manic depressive psychoses (11.5 per cent).

A conception of what is to be regarded as abnormal character is obviously one that must deal with qualities that are quite different in their nature and combinations. Within recent years it has become possible to differentiate more clearly between various qualities of abnormal character, from the formulations that have been made by Kretschmer,[12] in his studies of temperament and character in their constitutional relationships in the schizophrenic and cyclothymic psychoses. Kretschmer's differentiation of the schizoid character as a constitutional quality which has its anlage in the germ

plasm has made possible formulations and methods of investigation that bear directly upon the genetic problems of schizophrenia. The schizoid character is determined by the inter-action of a special quality of temperament with the experiences of life. This type of temperament is distinguished by the quality of its sensitiveness, which may vary between extreme sensitiveness and dullness of response. This emotional quality has its conditioning influence upon thought and behavior and leads to characteristic ways of reacting. These qualities, which in milder degrees are recognizable as average shaping influences on human character, may, when more pronounced, mold the personality into definitely abnormal directions. In such instances they distinguish an individual as one of abnormal character or in extreme manifestations as a schizoid psychopath.

Schizoid qualities of abnormal character occur with such frequency in the families of schizophrenic individuals and have in their characteristics so much that corresponds with qualities manifested in the schizophrenic disorder, both in pre-psychotic phases as well as its course and terminal states, that it is important to ascertain the relation of these specific qualities to the phenotype schizophrenia. This aspect of genetic relations in schizophrenia has been investigated by Hoffman [10] in his study of the descendants of schizophrenic individuals and by Kahn [11] who has investigated more particularly the interrelation of schizoid and schizophrenia in their heredity course. Hoffman sums up the results of his observations in formulations of the following theses:

1. Schizoid character anomalies occur among the children of a schizophrenic parent even if the other parent were not schizoid.

2. The crossing of a schizophrenic parent with a schizoid mate may give descendants among whom, although this is not exclusively so, schizoid types tend to predominate.

3. The combination of schizoid disposition with circular phenomena among the children of schizophrenic parents occurs only when the non-schizophrenic mate furnishes a reason for this.

In the contribution of Kahn the concept of schizoid is formulated as a complex of psychic qualities by which a definite pattern of life reaction is conditioned. The anlage for this is determined by the germ plasm and is an inheritable factor. His observations led him to the view that in a mendelian course schizoid qualities are

transmitted as a dominant characteristic. He would consider the schizophrenic psychosis as being something more than schizoid, a qualitative rather than a quantitative difference. He suggests that in the anlage to schizophrenia there are two components. One of these is the schizoid factor which is never absent and the other component is a specific factor that is in relation with the destructive process characteristic for the schizophrenic deterioration. In this way an explanation is suggested of the genotypic influence of the schizoid factor in the determination of the schizophrenic phenotype.

Such theoretical formulations as these of Hoffman and Kahn present a direction of thought which suggests possibilities of more exact analyses of genetic relations which exist not only in schizophrenia, but also in other psychoses. Qualities of temperament and character, with their anatomical and physiological correlations, thus become involved in questions of genetic relations, and etiological problems of the psychoses gain a wider biological interest.

The application of these theories, that abnormal mental qualities which are not classifiable as definite psychoses may have a part in the genetic course of schizophrenia, to the study of heredity relations in schizophrenic families has emphasized the importance of abnormalities that are in remote and indirect relation to the phenotype schizophrenia. The thought is presented that in a schizophrenic family group schizoid abnormalities may link together scattered schizophrenic phenotypes and that this may make the genetic course of this disorder understandable in the character of a mendelian recessive heredity. It is a conception that has seemed to find support in a number of studies of the genetic relations in schizophrenia that have been made in recent years and should stimulate further investigation from this viewpoint.

Similar or Polymorphous Heredity Relations.

It is a matter of fundamental importance for a knowledge of the heredity course of schizophrenia to know whether or not the anlage for this disorder is created only from that of psychoses of similar type or whether it may arise from that of disorders which are clinically different.

This is a subject that concerns fundamental genetic relations not only of schizophrenia but also all of the endogenous psychoses.

It involves relations that are most complex and any solution of this problem seems far off until more is known regarding the structure of the anlagen for specific qualities of constitution and the nature of the factors that are transmitted.

Instances of psychoses and mental abnormalities that are not schizophrenia occur frequently among parents and siblings of schizophrenic individuals and in more remote relationships. An impression of the variety and comparative frequency of types of psychoses and mental abnormalities in the families of schizophrenic individuals may be gained from Table V.*

TABLE V.

CLASSIFICATION AND ANALYSIS OF 100 SELECTED CASES OF SCHIZOPHRENIA.

	Direct		Atavistic	Collateral	Siblings	Total	Per cent
	F	M					
Schizophrenia	3	6	1	25	35	70	16.39
Paranoid	..	2	...	...	1	3	.7
Manic depressive psychoses	1	..	2	8	1	12	2.81
General paresis	..	..	...	...	...	...	...
Epilepsy	..	1	2	7	4	14	3.28
Senile dementia	..	..	6	8	...	14	3.28
Psychoses undiagnosed	6	8	10	64	15	103	24.12
Suicide	..	..	2	9	...	11	2.58
Feebleminded	..	..	...	5	5	10	2.34
Abnormal character including schizoid	23	16	14	38	36	127	29.74
Nervous diseases	..	2	2	6	2	12	2.81
Alcoholism	5	..	6	13	4	28	6.56
Apoplexy	..	1	16	6	...	23	5.39
Total	38	36	61	189	103	427	...
Per cent	8.9	8.43	14.29	44.26	24.12	...	...

In this table are compiled the psychoses and mental abnormalities occurring in 100 series of siblings in each of which at least one

* For some of the data of families that are included in this series, we are indebted to the Warren State Hospital of Pennsylvania; the Danvers, Massachusetts, State Hospital and to the Michigan state hospitals at Kalamazoo and Pontiac.

individual was a hospital case of schizophrenia. The families included were selected because of fairly extensive knowledge of their members and the occurrence of one or more instances of mental abnormalities in the family group.

In the families of these 100 schizophrenic individuals there were 427 individuals who were mentally abnormal, in addition to the patient. Of these, 70, or 16.39 per cent of all those abnormal, were instances of schizophrenia. There were 103 instances of psychoses which could not be accurately diagnosed. Excluding these, there were 254 instances of mental abnormalities which were not diagnosed as schizophrenia. Manic depressive psychoses occurred in 12 individuals or 2.80 per cent of all mental abnormalities. The most frequent form of mental abnormality was that diagnosed as abnormal character. In this group were included individuals who were outstanding in showing abnormal qualities of temperament and character, but could not be considered as having a clearly defined psychosis. This group included 127 individuals, or 29.74 per cent of those having some form of mental abnormality.

In nine instances one or the other parent had schizophrenia, and there were 65 parents who had psychoses that were not schizophrenia.

There were 103 instances of mental abnormalities among the siblings of the schizophrenic patients. Of these, 35 were cases of schizophrenia and 68 had psychoses of some other type.

Rüdin[9] in a series of 701 selected families of schizophrenic patients, found among their siblings 79 instances of psychoses which were not schizophrenia, not including those who would be classed as having psychopathic conditions. Among parents of schizophrenic patients, he found that non-schizophrenic psychoses were relatively frequent. In 735 unselected series of siblings, one of which was a case of schizophrenia he found that only in 34 instances did one or the other parent have schizophrenia. There were 130 parents who had psychoses that were not schizophrenia. About one-third of the parental psychoses were classifiable as functional in type and about one-third as organic, alcoholic or of uncertain diagnosis. "Leaving out of consideration psychoses of uncertain diagnoses one can state that about one-third of the psychoses of the parents belong in the group of schizophrenia and that

only in about one-twelfth of this series did a parent have the same disorder (59 out of 735 series). Only in this relatively slight degree can one speak with certainty of a direct heredity of schizophrenia."

The frequency with which psychoses other than schizophrenia occur in the families and particularly in the parents and siblings of schizophrenic individuals brings up the question as to whether this is accidental or is something common to the heredity course of this disorder. This has been considered in an analysis by Rüdin of the comparative frequency with which schizophrenia and other psychoses occur among the children of parents having various conditions of mental abnormality. The results of this are given in Table VI.

TABLE VI.

THE PROPORTIONAL FREQUENCY OF SCHIZOPHRENIA AMONG CHILDREN, FROM PARENTS HAVING VARIOUS MENTAL ABNORMALITIES (RÜDIN[9]).

		Schizophrenia, percentage	Other psychoses, percentage	Total psychoses, percentage
I.	Both parents free from schizophrenia....	4.5	4.12	8.6
II.	One parent schizophrenic.....	6.18	10.30	16.49
III.	One parent psychotic but not schizophrenic; one or the other parent may or may not be alcoholic.....	8.21	8.21	16.43
IV.	One or both parents psychotic; one or both parents also alcoholic.....	14.81	7.40	22.22
V.	One parent alcoholic; neither parent psychotic	7.80	5.20	13.01
VI.	Both parents psychotic, but not schizophrenic; alcoholism present or absent in one or both parents.....	22.72	...	22.72
VII.	Schizophrenic patient; parents not psychotic but tainted indirectly by schizophrenia	8.07	6.83	14.90
VIII.	One parent psychotic but not schizophrenic; one or both parents alcoholic.	15.78	7.89	23.68

From the data in the foregoing table, one observes that the frequency with which schizophrenia occurs in a generation of siblings is influenced not only by the frequency with which schizophrenia

is present in the parents, but also by the frequency with which these have psychoses other than schizophrenia or are alcoholic. This leads Rüdin to the conclusion that "the occurrence of other types of psychoses in the parents and siblings of schizophrenic individuals is not solely an accidental accompaniment of the heredity course of schizophrenia but is something that is in intimate relation with this."

It would seem that in the present state of our very imperfect knowledge of what is involved in the transmission of qualities that determine the anlage to the psychoses, no definite conclusions can be formulated as to the genetic significance of the inter-relations of various types of psychoses and the anlage for schizophrenia. While the occurrences of psychoses of different types in parents and siblings of schizophrenic individuals seem to indicate dissimilar or polymorphous heredity relations, this does not prove that one type of psychosis may be transformed into one that is different in succeeding generations or that the anlage for schizophrenia may be created from that of a psychosis of different quality. In spite of the evidence of polymorphous heredity relations in families in which schizophrenia occurs, one gains from studies of genetic charts of these families, the impression that in most of these families there exist sources from which the factors essential for the anlage for the schizophrenia of a descendant may be derived. These occur as instances of schizophrenia in collateral or atavistic relations to the schizophrenic descendant or as mental abnormalities, which, it has been suggested, may well be the expression of qualities in some way related to the structure of the schizophrenic phenotype. If the heredity course of schizophrenia follows that of a mendelian recessive mode, one must consider the genetic influence of factors which are not outwardly manifested as schizophrenia but may be latent or manifested as influences giving atypical qualities to a non-schizophrenic phenotype. From this viewpoint, a parent who had a non-schizophrenic psychosis might yet transmit qualities essential for the production of the schizophrenic anlage. In this respect one might well speak of a similar heredity. At the present time, it would seem that one must believe that the existence of polymorphous heredity in the genetic course of schizophrenia is neither proved nor disproved.

Anteposition.

It has been found that in the heredity course of undifferentiated psychoses, the mental disorder of the descendant tends to be manifested at an earlier age than that of the antecedents (Mott,[18] Myerson [19]).

Investigations of this phenomenon of anteposition or antedating in relation with schizophrenia seem to indicate that this is also a characteristic of the heredity course of schizophrenia. It also seems that where several members of a generation of siblings have schizophrenia, the onset of the disorder is at an earlier age in the younger children than those older (Myerson,[19] Vorster,[20] Rüdin,[9] Berze [15]).

In the most critical investigation that has been made of this aspect of the heredity course of schizophrenia, Rüdin [9] found that in 50 instances of schizophrenia of parents and children, the average age of onset in the parent was 36 years, and of the children 24.25 years. While this is in agreement with the theory of anteposition, Rüdin has directed attention to certain difficulties which are inherent in the methods of investigation that have usually been followed which make it uncertain that the results obtained warrant the acceptance of this as a valid law in the heredity course of this disorder. In particular, he mentions the discrepancy which exists between the late age of 36 years at which the onset occurred in the parents of the series he studied, and that which clinical experience shows is the usual age period for the onset of the disorder. As schizophrenia is a disorder preeminently of early life, one must believe that the average age of onset in his series of parents is much older than one would expect. In a large series of cases Kraepelin [1] found that 76 per cent developed the disorder before the age of 30 years. It would also seem that the early age at which schizophrenia develops and the nature of the disease would make it likely that only those cases of schizophrenia would become parents in which the disorder had a late onset or those in whom the manifestations of the disorder were so mild that the age of onset would be difficult to determine.

In respect to the question whether the younger children in a generation tend to develop their disorder earlier than those older, Rüdin found, among 72 instances of two or more cases of schizophrenia in a generation of siblings, that where the disorder oc-

curred among the first born, the average age of onset was 25.86 years, and of the next born, 24.68 years. In eight instances of three cases of schizophrenia in a generation the average age of the third oldest was 24.52 years.

It would seem that while there is statistical evidence of the occurrence of anteposition in the heredity course of schizophrenia, the criticisms of the data so far obtained leave an uncertainty as to whether this has been proved to the extent that it can be regarded as a constant and definite phenomenon.

Heredity and Sex.

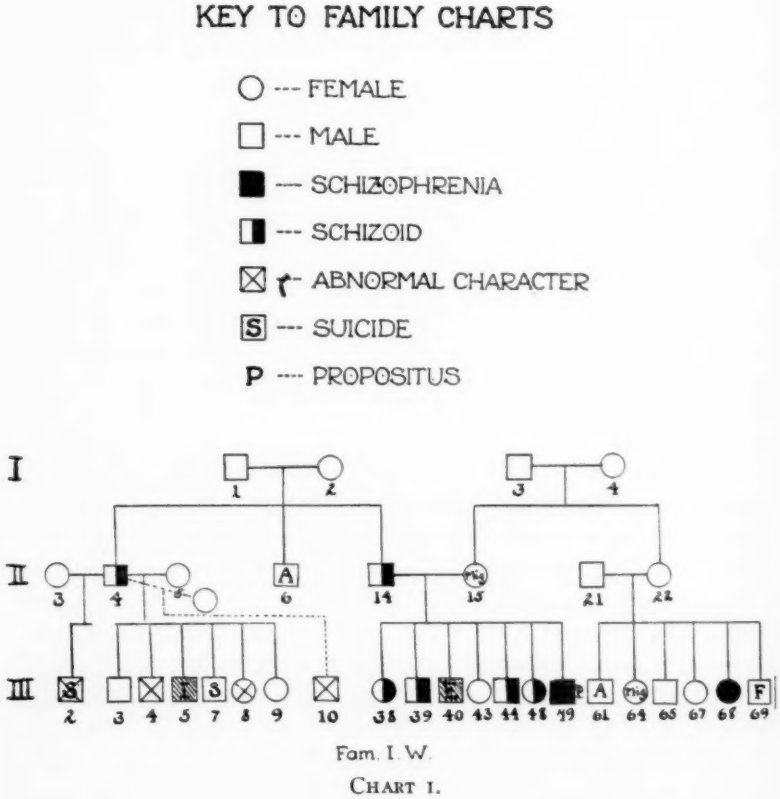
There is no adequate information available that indicates that the transmission of the factors for the anlage to schizophrenia follows the course of sex-linked characteristics, or that the anlage is transmitted more through the line of one parent than the other. Where several members of a generation of siblings are schizophrenic, the males are not more frequently disordered than the females.

Family Relations of Schizophrenia.

While mass statistical studies of genetic relationships in schizophrenia give an insight into the general importance and distribution of tainting qualities, it is from the study of individual family groups in which schizophrenia occurs that one may gain a more impressive illustration of these relationships. Such studies give an impression that there are certain characteristics in these families in the quality of the abnormalities and their distribution that seem to distinguish their genetic relationships from those of other psychoses. It is appreciated that there is an element of unfairness in drawing any definite conclusions from selected families in which heredity tainting is unusually prominent. There is, however, much that is of value in such a consideration, as it furnishes a basis for the analysis and discussion of heredity relations in the light of the theories that have been formulated from other approaches to the problem.

For this purpose we have selected from our material a series of well-studied families that serve in graphic manner as illustrations of what quality of heredity one finds in schizophrenic families and in what relation this stands to the disorder of the patient.

In Family I, W., there are genetic inter-relations through two generations of abnormal character, schizoid qualities and schizophrenia. From the mating of a schizoid father whose siblings were of abnormal character, and a mother whose sister had a schizo-



Fam. I. W.

CHART I.

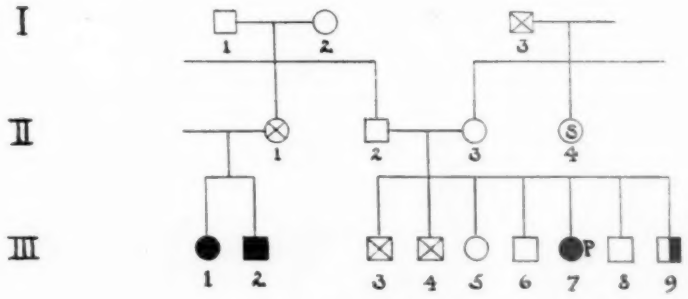
phrenic daughter, there was produced a generation of four schizoid personalities and one case of schizophrenia.

Family I, W. The Propositus, III 49, was alcoholic in early youth. At 40 years of age he had difficulty in thinking. At 44 years he had auditory hallucinations ("spirit voices controlled him") and delusions of persecution. At 48 years he was committed to a hospital, where he showed emotional deterioration and impaired judgment. Diagnosis: Schizophrenia.

There were in his generation six siblings. The eldest sister, III 38, was a scold, irritable and showed extreme outbursts of temper. She was con-

sidered by her family as definitely abnormal. Diagnosis: Schizoid personality. A brother, III 39, was an odd character, stubborn and unreasonable. He lived a lonely, secluded life. Diagnosis: Schizoid personality. A brother, III 40, at age of 25 years developed epilepsy. This is of interest in the genetic relation with the migraine of the mother and cousin. A brother, III 44, was always reserved, unsociable and peculiar in his family life: "one could never get acquainted with him." Diagnosis: Schizoid personality. A sister, III 48, was always irritable, stubborn and unreasonable. Diagnosis: Schizoid personality.

This generation, which showed one individual who was definitely schizophrenic and four others of schizoid character, had as its father II 14, a man who was unusually strict in his views of life, bigoted, quick tempered and excessively religious. Diagnosis: Schizoid personality. His brother, II 4, was irascible and disagreeable in his home life, stingy, quick tempered and moody. Diagnosis: Schizoid personality. This man had children by



Fam. II. AA, 4239

CHART 2.

three marriages. By the first he had a son who was unable to get on at home and committed suicide at the age of 21 years. Diagnosis: Abnormal character. From the second marriage there were six children. The second son, III 4, was alcoholic, never had any occupation, and was regarded as a peculiar, badly balanced man. Diagnosis: Abnormal character. III 5 was a patient in a mental hospital. The nature of his psychosis is unknown. III 7 committed suicide at the age of 40 years. III 8 was a woman "no one could get on with, the worst devil that ever got out." Diagnosis: Abnormal character. From the third mating he had an illegitimate son who was described as "a wild boy and a wild man." For a part of his life he was in a reformatory. Diagnosis: Abnormal character. A brother of the father of this man, II 6, was an alcoholic.

The mother of the Propositus, II 15, suffered from migraine. Her sister, II 22, was not regarded as abnormal but of her six children, III 61 was alcoholic; III 64 had migraine; III 68 at the age of 36 years showed apathy, was mute and had an ambivalent quality of thought. Diagnosis: Schizophrenia. The youngest brother, III 69, was feebleminded.

In this Family II there is an inter-relation through three generations of abnormal character and schizophrenia.

Family II, A. A. 4239, The Proposita, III 7, at the age of 38 years developed a psychosis, characterized by delusions of influence and auditory hallucinations which controlled her behavior. At the age of 58 years she came into a mental hospital where she showed the same abnormalities and a mild emotional deterioration. Diagnosis: Schizophrenia. Of her six siblings, the oldest, III 3, was an odd personality who never worked and lived a quiet, secluded life. Diagnosis: Abnormal character. III 4 was alcoholic and always considered as an eccentric, irresponsible person, and a strange type of man. Diagnosis: Abnormal character. The youngest

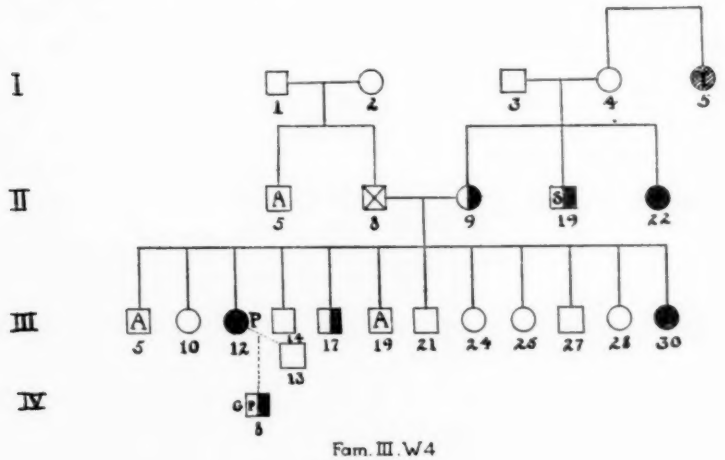
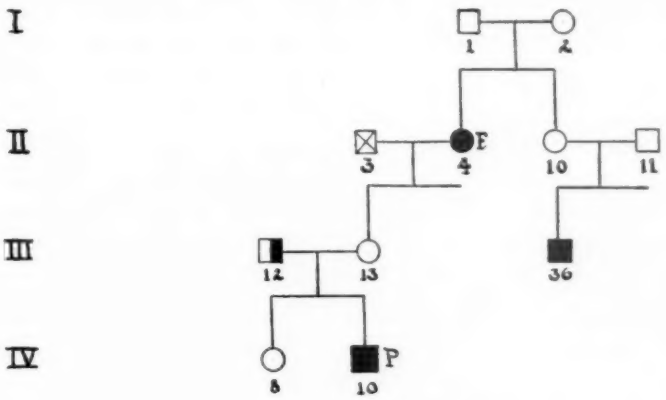


CHART 3.

brother, III 9, never married, lived alone, was irritable and showed many eccentricities. Diagnosis: Schizoid personality. The parents of this generation of siblings were not regarded as abnormal, but the father had a sister who was regarded by her family as eccentric and of abnormal character. This sister had two schizophrenic children, III 1, and III 2. The mother of this proposita had a sister, II 4, who committed suicide. The father of this sister, I 3, was an odd individual known to his neighbors as "the fool." Diagnosis: Abnormal character.

In this Family III, W. 4, there are mental abnormalities through four generations. Two parents, both of whom showed qualities of abnormal character, the mother being of a sibling group which showed both schizoid and schizophrenic individuals, have a series of descendants two of whom were schizophrenic and one definitely schizoid.

The Proposita, III 12, was in her youth stubborn and unable to adapt herself to life at home or school. At the age of 20 years she became excessively religious, developed delusions and had auditory hallucinations. In behavior she was impulsive and negativistic. Diagnosis: Schizophrenia. Her son, IV 8, in his youth was sensitive, irritable, had violent outbursts of temper and easily formed ideas of influence. In later life he developed paresis, from which he died in a mental hospital. Diagnosis: Schizoid personality and paresis. Among the siblings of the proposita were two brothers, III 5 and 19, who were severe alcoholics. A brother, III 17, was irritable, jealous and "the most hot tempered member of the family." Diagnosis: Schizoid personality. The youngest sister, III 30, was in her youth timid and excitable. At 31 years during pregnancy she had a series of uremic convulsions. After a brief period of delirious excitement she



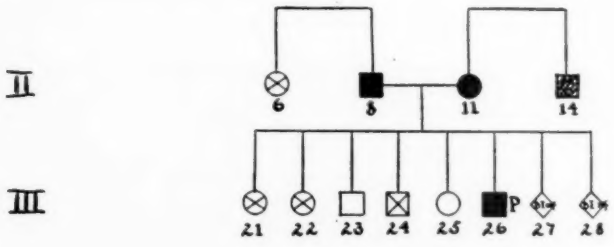
Fam. IV. W3

CHART 4.

progressively deteriorated and showed dilapidated thought and impulsive behavior. Diagnosis: Acute toxic psychosis, schizophrenic deterioration. The parents of this generation were both mentally abnormal. The father, II 8, was an odd personality, head-strong, quick tempered and peculiar in his behavior. Diagnosis: Abnormal character. His brother, II 5, was hot-tempered and a chronic alcoholic. The mother, II 9, was emotionally cold, unsympathetic in her family and social life and was regarded by her family as odd and peculiar. Diagnosis: Schizoid personality. A brother of the mother was of unstable character, at times alcoholic and was described as "one of the queerest of men." He committed suicide following a quarrel with his wife. Diagnosis: Schizoid personality. A sister, at the age of 40 years, developed ideas of persecution and auditory hallucinations. Her thought showed a characteristic schizophrenic looseness. Diagnosis: Schizophrenia. The mother of this generation, I 4, was not mentally abnormal, but she had a sister, I 5, who had a psychosis, the nature of which is not known.

In Family IV, W. 3, there are schizophrenic psychoses and mental abnormalities in three generations. From the mating of a schizophrenic woman, whose apparently normal sister had a schizophrenic son, and a man of abnormal character there was produced a woman who was not abnormal but who had a schizophrenic son from her mating with a schizoid personality.

The Propositus, IV 10, was in youth odd and unstable. In later life he was several times committed to mental hospitals where he showed auditory hallucinations, stereotyped actions and marked deterioration. Diagnosis: Schizophrenia. The father of this man, III 12, was a man noted for his bad temper and moodiness. At times there were periods of marked sulkiness and irritability. Diagnosis: Schizoid personality. The mother, III 13, was apparently normal. Her parents were both mentally abnormal. The father, II 3, was an odd character, irascible, headstrong, and was in frequent



Fam. V. P. 4226

CHART 5.

quarrels. Diagnosis: Abnormal character. The mother, II 4, was regarded as feebleminded, but at the age of 48 years she developed a psychosis characterized by irritability, episodes of excitement, difficulty in thinking and progressive deterioration. Diagnosis: Schizophrenia and Feeblemindedness. This woman had a sister, II 10, who was not regarded as abnormal, but her son, who was committed to a mental hospital, had auditory hallucinations, delusions of influence, and progressively deteriorated. Diagnosis: Schizophrenia.

In this Family, V, P. 4226, there is the exceptional occurrence of the mating of two schizophrenic individuals. The father had a sister who was of abnormal character and the mother had a brother who was schizophrenic. Among the descendants of this mating are one who was schizophrenic and three who were of abnormal character.

The Father, II 8, of the Propositus, III 26, at the age of 20 years showed an excessive interest in religion. At the age of 24 years he developed

what seems to have been a depression suggesting a manic depressive quality. For several months he was down-hearted, held ideas of self-accusation and believed that he was eternally lost. He apparently made a good recovery from this condition, but at the age of 49 years he again became depressed. Delusions of a religious quality were prominent and there were auditory hallucinations. He spoke of being controlled by God, who told him that he never would need to work. He later refused to answer questions, stating that God had told him not to talk. He said that he had been in close communication with God since his conversion at the age of 18 years. From then on there was progressive emotional deterioration. Diagnosis: Schizophrenia.

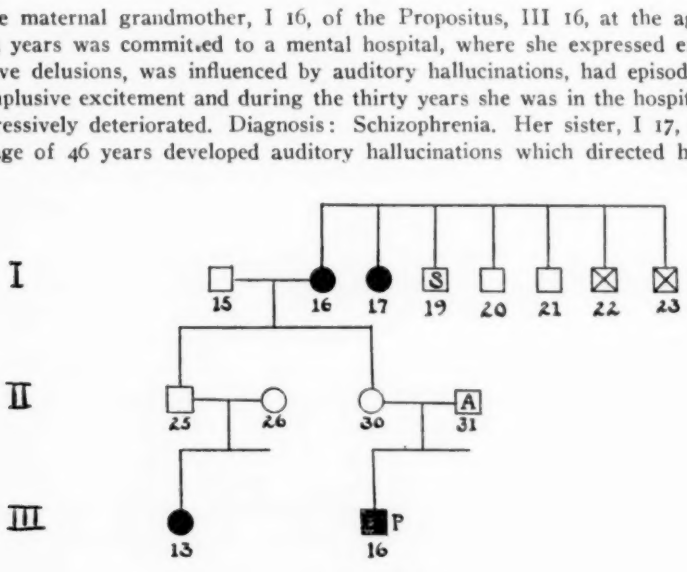
The atypical character of the course of the psychosis of this man with an early phase showing manic depressive characteristics and the final end stage of schizophrenia may have its explanation in the suggestion of Hoffman [10] that there sometimes occurs a change of dominance in the psychosis type. Borrowing an analogy from mendelian theories that are applied in biology, Hoffman suggests that where two genotypic factors exist in the anlage, one of these may dominate at one time and the other at a later period.

A sister of the father, II 6, was an odd personality and was described as a nervous sort of woman who talked foolishly. Diagnosis: Abnormal character. The mother of the Propositus, II 11, had in early life numerous hysterical episodes. At the age of 55 years she was committed to a mental hospital where she showed auditory hallucinations, a delusional content of thought, mutism and emotional deterioration. Diagnosis: Schizophrenia. A brother of the mother, II 14, developed a state of agitated depression at the age of 47 years and recovered after two years. Diagnosis: Manic depressive psychosis.

From the mating of the two psychotic parents, II 8 and 11, there were eight children. The sixth child, III 26, the propositus of this family group, was an odd personality in youth, difficult to understand and highly imaginative. At one time he was excessively religious, but later turned against the church. At the age of 22 years he entered upon a period of over-activity, in which he bought many useless things and wasted his savings. At times there were brief episodes of depression in which he expressed the idea that he was being persecuted and that he was acted upon by electricity. At 27 years he was committed to a mental hospital. The same delusions persisted. There were periods when he was inaccessible and indifferent. There were no hallucinations. After a few weeks he became more active and was removed from the hospital. He worked irregularly, and there persisted oddities of behavior. Diagnosis: Schizophrenia with cyclothymic intermixtures. The oldest sister, III 21, was hysterical; III 22 was always unstable and at times showed hysterical reactions. The brother, III 24, was regarded as peculiar, and was unusually slow in comprehension and actions. Diagnosis: Abnormal character.

In this Family VI, P. 1, there are two cases of schizophrenia in the first generation. The second generation is not abnormal, but in the third generation there is one schizophrenic individual and one who was epileptic, but showed very definite schizoid qualities of character.

The maternal grandmother, I 16, of the Propositus, III 16, at the age of 53 years was committed to a mental hospital, where she expressed expansive delusions, was influenced by auditory hallucinations, had episodes of implusive excitement and during the thirty years she was in the hospital progressively deteriorated. Diagnosis: Schizophrenia. Her sister, I 17, at the age of 46 years developed auditory hallucinations which directed her



Fam. VI. P 1

CHART 6.

behavior. At times there were episodes of impulsive excitement. She was in a mental hospital for 10 years, when she had improved to a degree that permitted her discharge. Diagnosis: Schizophrenia. Three of her brothers were of abnormal character: I 19, committed suicide; I 22 was a severe alcoholic, and of violent temper and ugly disposition; I 23 was an eccentric individual who was called "crazy" by his relatives.

In the second generation there were no outward evidences of mental abnormality in the direct line. A normal son, II 25, of a schizophrenic mother, I 16, had a daughter, III 13, who at the age of 53 years was committed to a hospital where she had delusions of persecution and was influenced by auditory hallucinations. She was irritable, inaccessible and progressively deteriorated. Diagnosis: Schizophrenia. A daughter of II 30 who was not abnormal had a son, III 16, who at the age of 21 developed epilepsy. Convulsions occurred at frequent intervals during a hospital residence of 12 years. Apart from these he showed reactions that seem to

have been determined by schizoid qualities of character. He was excessively religious and believed that he was a sacred person. He spent days in prayer and fasting and after a period in which convulsions were absent expressed the belief that God had cured him by anointing him with oil. Diagnosis: Epilepsy and schizoid character.

This intermingling of different types of psycho-pathological qualities Hoffman has discussed in his conception of constitutional alloying. In this there may occur an intermingling, in a constitution, of character qualities which come from different genetic sources. This theoretical conception has found a clinical application in Binzwanger's [21] discussion of schizoid alcoholic mental disorders and especially in the contribution of Kahn [11] and Hoffman [10] in which they consider the interaction of schizoid and cycloid qualities in the shaping of psychoses. Such interaction produces complicated phenotypes that clinically show qualities determined from different genetic sources. These conceptions have a direct bearing on problems of the heredity course of schizophrenia. They have a fundamental significance that must be appreciated in dealing with the question of polymorphous heredity in the anlagen to psychoses. What may appear to be the creation of a new phenotype from one that is different may perhaps be explained by the influence of characteristics dominant elsewhere in ancestral lines than in the parent.

Summary.

Statistical evidence and the results of the analyses of individual families in which schizophrenia occurs indicate that heredity is an important factor to be considered in the etiology of schizophrenia.

In a series of 150 unselected cases of schizophrenia there were 117, or 78.01 per cent, that had heredity tainting factors, usually considered as of significance in the heredity of the psychoses.

This is about equal to that found for psychoses in general and considerably greater than that of the non-psychotic, 78.01 : 67.

It is slightly less than has been found in manic depressive psychoses, 78.01 : 84.13, and in epilepsy, 78.01 : 81.26.

The most frequent tainting factor is psychoses. These occur among the mental abnormalities of the antecedents and members of the families in a percentage of 43.22.

This is about three times greater than has been found in those who are not psychotic.

It is about the same as occurs among the psychotic in general, 43.22 : 45.9.

It is about equal to that existing in the heredity of manic depressive psychoses, 43.22 : 43.86; and much greater than occurs in epilepsy, 43.22 : 22.5.

Abnormal character occurs more frequently among the antecedents and members of the families of schizophrenic patients than in any other form of psychosis. It occurs as a tainting factor nearly twice as frequently as in manic depressive psychoses, 21.24 : 11.5 and somewhat more than exists among the insane in general, 21.24 : 18.8.

Mental abnormalities occur much less frequently among the parents of schizophrenic patients than in the psychotic in general.

Parents of manic depressive patients are much more frequently tainted with mental abnormalities than are those of the schizophrenic, 25.64 : 15.51.

Schizophrenia has its heaviest heredity tainting in antecedents who are in indirect relationship to the patient.

Indirect tainting in schizophrenia is more than twice as great as in manic depressive psychoses, 38.3 : 18.09; and much greater than in the psychotic in general.

Schizophrenic patients are more tainted in atavistic relationship, *i. e.,* grandparents, than are those who have manic depressive psychoses, 25.64 : 15.5.

The evidence obtained from the application of mendelian theories to the investigation of the heredity course of schizophrenia tends to indicate that the transmission of the factors for the creation of the anlage to schizophrenia follows the course of a mendelian recessive character.

The factor that is transmitted seems to be of complex rather than simple mendelian character.

Specific qualities of abnormality of temperament and character, that in general correspond to those designated as schizoid, occur with such frequency among members of families in which schizophrenia exists, that the thought is suggested that these may stand in some relation to the genetic course of this disorder.

Non-schizophrenic psychoses and mental abnormalities occur among parents and families of schizophrenic individuals to a degree that suggests polymorphous heredity relations in this disorder.

The proportional frequency with which these occur indicates that this inter-relation cannot be regarded as accidental but rather as something that seems to be in intimate relation with the heredity course of schizophrenia. One must, however, in the course of a mendelian recessive character, such as seems to exist in schizophrenia, give consideration to the possibilities of the transmission of latent qualities which may not be outwardly manifested but yet be concerned in the production of the anlage to schizophrenia of a descendant. This makes possible a similar quality of heredity. At the present time the existence of polymorphous heredity in schizophrenia is neither proved nor disproved.

While there is some statistical evidence of the occurrence of anteposition in the heredity course of schizophrenia, a critical consideration of the data on which this is based does not justify the acceptance of this as a regular occurrence.

There is no certain evidence that the heredity course in schizophrenia is in any way sex-linked.

Consideration of the family stocks in which schizophrenia occurs tends to show the existence of certain specific characteristics that appear as schizophrenic phenotypes or as specific qualities of temperament and character that may be manifested in various members of the family or as a modifying influence in the shaping of the clinical form of psychoses that are not dominantly schizophrenic.

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THE ONSET OF SCHIZOPHRENIA.*

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Study of onset of disorder in male patients of this hospital seems to establish two factors preliminary to schizophrenic psychoses. Firstly, the appearance of the disorder is late in a long series of subjectively difficult adjustive efforts. Secondly, it seems never to occur in those who have achieved if only for a short time a definitely satisfying adjustment to a sex object. We have not been successful in our effort to identify exactly the factors which cause milder maladjustive efforts to pass over into schizophrenia. Neither do we believe we are justified by accumulated facts, to stress the sex factor as of exclusive importance. Much more data is needed in regard to the onset of the malady; at this stage, however, there seems little reason to doubt that cultural distortions provided by the home are of prime importance. We have not seen maladjustment which was without a foundation of erroneous attitudes which parents or their equivalent had thrust upon the child. We have found all sorts of maladjustments in the history of patients who suffered the grave psychosis, but regardless of vicious influences subsequently encountered, the sufferer had acquired the tendency to such an illness while in the home situation. Interpersonal factors seem to be the effective elements in the psychiatry of schizophrenia.

Objective manifestations of maladjustment are now divided among the three classes of psychoneurotic, psychopathic, and psychotic. The static implications of current teaching is unfortunate. The medical man in general envisages schizophrenia as a strange entity which befalls the predisposed. Teaching should emphasize the dynamic view of these situations.

* A part result of the study of schizophrenic motivation in progress in the clinical research service of the Sheppard and Enoch Pratt Hospital, Baltimore. Read in abstract before the joint meeting of The American Psychiatric Association and the American Psychopathological Association, New York, June 11, 1926.

The great number of our patients have shown for years before the break, clear signs of coming trouble. A number of them were brought to notice by the outcropping of behavior of a simple psychoneurotic sort. Unwitting attempts at hysterical incapacitations not only precede many psychoses, but actually make up much of the psychotic picture in some cases. Reactions by obsessive substitutions are seen in a small number to have preceded for years frank schizophrenic phenomena. Here, too, the maladjustive "psychoneurotic mechanism" is continued in the psychosis, and we may find with the autochthonous thoughts of schizophrenia, a mingling of doubts and scruples of a simple psychoneurotic nature. The gradations from neurasthenic picture into schizophrenia would be easy to observe, did we but attend more clearly to the mental state of quasi-normal adolescents. Anxiety conditions which deepen into schizophrenic panic occur in numbers.

The psychiatrist sees too many end states and deals professionally with too few of the pre-psychotic. To him, "ideas of reference" are apt to imply psychosis; to one who has comphrehensive data on psychoneurotics, psychopathics, and eccentric "normals," such delusional content is recognized as wide spread and simply one of the signs of inefficient adjustment to the demands of life. The institutional physician, for that matter, cannot but realize that those who require supervision are but that portion of the psychotic who are so in the grip of their eccentricities as to be rendered conspicuous. He knows that many who leave as "social recoveries" have achieved nothing more remarkable than the ability to conform outwardly to certain standards—that they carry quite as extraordinary delusions as those of some others who cannot conform. With this in mind, it would seem as if we should lay great stress on the prompt investigation of failing adjustment, rather than, as is so often the case, wait and see what happens.

Most schizophrenics have shown evidences enough to excite even lay curiosity during more or less extended periods before mental disease was diagnosed. Not family physicians alone, but specialists in rhinology, laryngology, gastro-intestinal maladies, in urology and in gynecology, all these see the incipient schizophrenic and all too often "let things ride." I feel certain that many incipient cases might be arrested before the efficient contact with

reality is completely suspended, and a long stay in institutions made necessary.

If there is anything at all in our present views of mind and its disorder, watchful expectancy is not the method of choice in the difficulties of youth, and the provision of useful experience is the only hope for insuring such patients against trouble.[1] If there is any good reason for a policy of delay, it must reside in our lack of certainty as to what is to be done. In attempting to indicate promising lines, I shall review some of our notions of psychodynamics.

Ignoring that section of the population in the case of which serious physical factors exist,[2] we can distinguish three sorts of maladjustive processes which do not lead immediately to arrest of the individual's struggle.[3] They include *sublimatory resymbolizations* and *compensatory motivations,* neither of which interests us particularly here excepting in so far as they may antecede those processes more intimately related to schizophrenia. The *defense reactions,* infinitely diverse in their combinations, individual goals and explanatory rationalization, these are the maladjustive processes which can be seen to form a gradient from mere poses and trifling evasions of the obvious to the essential schizophrenia. They all show the characteristics that they are unwitting evasions and distortions of simple experience; means by which the organism

[1] Experience as here used refers to anything lived, undergone or the like: to that which occurs *in* the organism, rather than directly to events in which the organism is involved. Experience is mental; *i. e.,* it is reflected to a greater or lesser extent in behavior and thinking. At the same time, experience often occurs without conscious awareness.

[2] Roughly divisible among (1) the defective, whose equipment has low potential educability, so that he cannot undergo many varieties of experience, and so does not profit from many events; (2) the physically handicapped, *e. g.,* the hunchback; and (3) that group typified by the epileptics, in the case of which there appears to be a strong tendency to bizarre destructive reactions wholly injurious to the individual. Needless to say, "psychogenic" factors are important in every individual case in this group, as they are apt to be in the other two.

[3] In contradistinction to (a) depression, and (b) the anxiety processes, both of which are not only maladjustive but also methods which present no real attack upon the troublesome situation; as such, they may be regarded as a means of "standing still" before a problem.

interposes something artificial and relatively abstract in the complex of the individual and his environment, physical and cultural. From an objective viewpoint, the interposition seems "intended" to protect the creature from discomforts either internally conditioned as in conflict of deeper desires and ideals, or externally conditioned as in disconformity of supposed potentialities and environmental demands. Whether the individual struggles unwittingly to be other than he is, by poses and exaggerated reactions even amounting to psychotic excitements on the one hand, or substitute activities, rituals, etc.; or seeks peace by transference of guilt and blame from himself to others or to social institutions; or, again, effects a modification of the stress by partial or total incapacitation as in the hysterical disabilities of the invalid reactions;[4] in all these cases we find the irrational, "unconscious" protection of the self a central theme. The *barrier* subvariety of defense reactions, more particularly, are of a piece with schizophrenia. Here we find a structure, so to speak, thrust between the creature's accepted self and everything else. Whether he has unwittingly adopted (1) an attitude of repulsion to those around him, or (2) a "physical" concealment by secretiveness or even seclusive behavior, or finally, (3) erected a complex relation which subtends all contact with personal and extrinsic reality (schizophrenia); all these processes reflect an increase in the complexity of life and a necessarily destructive influence upon personal efficiency.

It may be taken for granted that a clear appraisal of the factors entering into any difficult situation should precede efforts at its resolution. In our potential patients there is to be found a significant grouping of irrational factors. We find that the youth has developed many misapprehensions as to his real potentialities of achievement. He has come to exaggerate, misunderstand and conceal various requirements for his satisfaction; to believe that he needs certain end-situations which are superfluous; that he can dispense with certain others which are a part of the common biological heritage. Finally, we find him unwittingly elaborating a

[4] Invalid reactions, in particular, may partake much of the nature of compensatory efforts. In these cases, all of which probably start as defense reactions, the acquisition of sympathy becomes a goal in itself, the kindly feelings of others making up for disappointments in more practical striving.

fabric of personal ideals which have but a complex order of relationship to possibility, and of notions concerning the estimation which others make of him that are simply fantastic. All these factors interlock in astonishing combinations, and his energy is dissipated in pseudo-problems and defensive processes. Feeling that an admission of his unhappiness—even to himself—is an indication of inadequacy or peculiarity, such an individual appreciates but vaguely that he is thwarted by an agency over which he has no control. That any increase in his correct insight would be helpful to him goes without saying.

Obvious though it should be, one must stress the factor of persons in all adolescent difficulties. The family physician seems often to accept the "physical" causation to which most patients refer their illness. Overwork, for example, enjoys great popularity as an excuse for mental disorder. Long hours, unsatisfactory working facilities, strain, even undernourishment—these masquerade as important much more frequently than not. The uncolored data from analytic investigation of patients quickly disabuses one of this "common sense" notion. Mental stress arises from societal relations, not from impersonal physical factors.[5] The question always to be answered is why the individual has proceeded into the state of physical depletion; what underlying societal factor has driven him to overwork, to deprivation of sleep, etc. When thus regarded, we find generally that the alleged causal factor is but a preliminary compensatory, sublimatory or defensive maneuver, to

[5] Fatigue as a phenomenon of the total organism has thus far escaped scientific measurement and study. That it includes an important psychic element cannot be gainsaid. Rest and recreation also belong largely in the category of mind, and physical quiescence—in so far as it can in fact be achieved under such circumstances—is unavailing in the presence of ineffective mental activity. *Vide,* in this connection, "Revery and Industrial Fatigue," Elton Mayo, Journal of Personnel Research, III, 1924, pp. 273-281.

Nothing herein is to be construed as denying to ill-health, toxæmia, loss of sleep, malnutrition, etc., an important place in the sequence culminating in many mental disorders. The point to be stressed is their entirely subordinate rôle. The data of our study do not minimize the importance of the *efficiency of the somatic apparatus* in the life situation. There may well be times when a cup of coffee would delay the outcropping of a mental disorder. We have observed incipient depression and neurasthenic states follow unwitting denial of the accustomed caffein dosage.

be regarded as the prodromal maladjustment which facilitated the more dramatic failure.

Of all the preliminary maneuvers by which youths seek unconsciously to safeguard themselves against the stress of conflict involving their societal relations, the use of alcoholic intoxication is probably the most impressive. This is to be regarded as a subvariety of the defense reactions; it is seldom that one finds a case in which other defense processes are not also in evidence. Among alcoholic youths, one finds a continuous gradation of simple "comfortable" dissociation bolstered by much drinking, to states of extreme discomfort with phobias, anxiety attacks, and hallucinatory phenomena.

It is never easy to say just when the schizophrenic patient has crossed the line into actual psychosis. In several cases we have found that there had occurred a brief phase of marked psychotic condition some considerable time before the final break. A patient, for example, when 17 underwent an operation firmly convinced that he would not survive the anæsthetic. He awoke minus his normal "grasp on reality." Things seemed for days to be quite entirely unreal—he "lived in a dream" in which all sorts of trifling and wholly unrelated occurrences seemed fraught with great personal import, to bear in some signal but incomprehensible way upon him: the operation had been the occasion for some strange mutilation: he was changed in some curious fashion. Then, one morning, all this was past; he "awoke his old self." He went on to the age of 25 years before the stress of heterosexual adaptation pushed him over into an exceptionally paranoid incipient schizophrenia. Another, receiving cocaine anæsthesia for a nasal operation, at 22, developed an extraordinary excitement like that seen in catatonia. This passed in some 30 hours, and nothing bizzare was shown for the next three months. As the date of his marriage approached, he passed swiftly into a severe catatonic schizophrenia. Yet another, having accidentally discharged a gun in the direction of a beloved uncle, developed blocking and phenomena of stupor which lasted a few days. Eight months afterward, in circumstances when both his heterosexual efforts and his strivings for prestige among his fellows were baffled, he underwent a catatonic dissociation. In these few from a number of such cases, we observe fairly well demarcated psychoses following a major event.

Each one of this group of patients had come to a psychopathic type of adjustment quite early in life.[6] By this is meant a group of peculiarities in behavior and thinking which seem to be manifestations of, firstly, an unconsciously determined inability to profit from certain particular events. Unlike the defective, the psychopathic has no fundamental defect of educability; he has experience of unrestricted variety, but certain of it fails of elaboration and synthesis into a practical whole. This we mean when we refer to his "inability to profit by experience"—the important point being that the experience from which he shows no practical learning lies in one or more circumscribed fields. These "resistant" areas are found to be the results of well known dynamics identical with those which we have identified in the psychoses and psychoneuroses. Secondly, psychopathic manifestations include characteristically a more or less distinct awareness of personal defect or abnormality, and this is accompanied by an exaggerated tendency to rationalize. Finally, there is a striking inability to advance considerations of the future into control over more immediate satisfactions. We know that the last mentioned characteristic applies to the immature, and, perhaps for this reason, we sometimes regard the psychopathic as instances of a selective arrest in mental development. Such a notion is permissible if it is understood as a

[6] In "Regression, A Consideration of Reversive Mental Processes" (*State Hospital Quarterly*, XI, Nos. 1, 2 and 3), we refer to this subject of the Psychopathic Personality, emphasizing the value of its study for the general theory of mental disorder. "Psychopaths" are not regarded as results of hereditary factors. It is true that germinal influences may prepare the soil for individual mental evolutions, for the maturition and growth by experience of the individual mind. There is nothing explanatory of the case before one, however, in this reference to hereditary defect or peculiarity. He is no product of pre-existing harmony or disharmony, but a product of growth, like anyone else. The analytic investigation of such individuals is most profitable research, even though its prosecution for therapeutic purposes may be discouraging.

It is regrettable that clinicians have not taken care to separate the group which they please to call "Psychopaths" into (a) those who show psychopathic type of maladjustment evolving from a basis of mental deficiency, and (b) the true psychopathic personalities, relatively stable maladjustments without mental deficiency in its accepted meaning. The former are problems of preventive medicine. The latter are an important field for study, and one almost entirely neglected.

general explanatory conception throughout psychopathology, rather than a specific conception of psychopathic states. By this, I refer to the identity of developmental sequences in this and all other groups. "Selective Arrest" then refers to distortion of customary development rather than to any stoppage in the accumulation and organization of experience. We have yet to determine what becomes of experiential material which is thus distorted; that problem is no less acute, however, than are many that we gloss over in our discussions of psychoneurosis.[7]

Psychopathic maladjustment is a product of the pre-adolescent phase of personality development. The adolescent upheaval in these individuals includes destructive phenomena of distinctive character. Schizophrenia is much more likely as an outcome than in those who have more coherently integrated the experience of infancy, childhood and the juvenile period. It is interesting, however, that the longer psychotic collapse is escaped, the less the chance of a grave disorder, and the less typical any illness which ensues. In other words a psychosis occurring in a psychopathic youth under, say, the age of 22, is in all likelihood frankly schizophrenic; but an initial psychosis occurring at, say, 30 will probably be a brief excitement—even if decidedly schizophrenic in type. This suggests that the psychopathic sort of maladjustment grows more effective as experience is accumulated, notwithstanding the fact that its interference with social efficiency may continue unchanged, or even increase.[8]

[7] To their credit be it said that the psychoanalysts are attacking the problem in their study of "Neurotic Dispositions." The outcome of investigations in this field has been somewhat concealed by the uniformity of "causal" factors that they uncover in all mental disorder. Analytically isolated factors have preoccupied them. We need to consider maladjustive syntheses as they occur in society, now that we have a grasp on abstract "mechanisms."

[8] Brief excitements with schizophrenic "coloring"—which are sometimes indistinguishable from the gravest psychoses—are a profitable field for investigation. The fact of their occurring fairly late in the course of a relatively stable maladjustment, and their disappearance with as residuals an exaggeration of the pre-existing peculiarities, connects importantly with certain types of post-psychotic personality. We see after some cases of frank schizophrenia, "Social recoveries" amounting in fact to severe psychopathic states; *e. g.*, the paranoid personalities which arise from catatonic schizophrenics, in the case of many "spontaneous" recoveries. These post-

Search for the phenomena actually constituting the onset of schizophrenia has brought several interesting facts to light. As already indicated in the case of delusions of reference, a great deal of the early phenomenology is an accentuation of what can be elicited from almost any mild case of mental disorder. A clear to vague content indicative of an unfriendly interest in him is general in psychopathological states. A great proportion of all maladjusted individuals believe that they suffer invidious discussion. The "neurotic tendency" to detract in a relatively unwitting effort to reduce others to a lower level than that adjudged to self, is evidenced not only in more direct behavior and thinking, but indirectly by projection as these persecutory trends. With any excuse, this progresses into notions that one is being slighted, annoyed, or definitely wronged. Were all those who entertained mild delusions of this sort to be assembled in institutions, the state would collapse immediately from depopulation. Phantastic meanings attached to the behavior of others, to one's own action, and even to events among inanimate objects—there too are non-specific. A remarkable number of those who are not regarded as psychotic entertain beliefs closely akin to delusions of mind-reading and of more or less mysterious control by another. Hypochondriacal notions form the rationalizations for innumerable maladjustive processes. Somewhat grandiose self-appraisals, on the one hand, and depressive depreciations and self-criticism, on the other, are easily uncovered in a great many patients. "Peculiar Thoughts" and even pseudo-spontaneity are not very uncommon: obsessions and preoccupations typify one large group of maladjusted.

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psychotic states sometimes arise *de novo*—they are not foreshadowed materially in the pre-psychotic personality. In the one case, a decidedly peculiar person undergoes a brief schizophrenic dissociation and comes from the process with accentuated warp. In another, an imperfectly adjusted person (lacking marked psychopathic traits) undergoes a severe schizophrenia and achieves from it a relatively stable maladjustment. Something of the implication of this was outlined in "Schizophrenia, Its Conservative and Malignant Features" (AMERICAN JOURNAL OF PSYCHIATRY, IV, 1924, pp. 71-79). See for an interesting consideration not unharmonious with our views, Boisen "Personality Changes and Upheavals Arising out of the Sense of Personal Failure" (AMERICAN JOURNAL OF PSYCHIATRY, V, 1926, pp. 531-552).

In a study centering upon cognitive features,[9] I have demonstrated several points bearing particularly upon the evolution of schizophrenic panic, and somewhat upon the insidious forms. We have come to regard all initial manifestations of these illnesses as strikingly uniform. From the standpoint of content, there appear those processes and symbol elaborations customary in dreaming. Instead of turning "day-remnants" to the purpose, the schizophrenic cognitive operations deal with perceptions of reality, personal and impersonal. All these—like the figures of the dream—are distorted into use for representing the personal situation and for efforts at solving it. It is at this stage that the patient believes he is watched and followed; the observers personifying in some cases the ideals which cannot control his desires of lower cultural value by ordinary activity. In others, they are personfications of the "evil" desires which pursue him to assault or "rob" and degrade him. In the first situation, exteriorization takes the form of the "voice of God" and in the second, the hallucination of threats or foul epitaphs. This sort of content connects with a more or less terrible affective situation of a primitive sort—an "insane mood" which has pre-existed the clear-cut cognitive phenomena. The motivation at work is in a general way conflicting groups of elaborated (and more or less successfully repressed) personal tendencies opposed by tendencies of the nature of ideals (cultural controls). The disturbance in reality-appraisal which has been slow in the predromal stages, is now very swift, progressing to a state in which everything is involved in the cognitive efforts. This stage in which nothing is without an incomprehensible meaning, and the ordinary exchange of intelligence is palsied, may continue in relatively simple elaboration. This is the catatonic type of schizophrenia. In it, the conflicts remain unresolved and the struggle expands into cosmic dramas and the psychic processes revert through the ontogenic repertory, perhaps down to the most primitive. At any time, however, this situation may pass into one of a few typical attempts at readjustment. There may be a massive resynthesis amounting to recovery with profit. There may be a fragile reorganization prone to relapse under fresh difficulties. Of

[9] "Peculiarity of Thought in Schizophrenia" (AMERICAN JOURNAL OF PSYCHIATRY, V, 1925, pp. 21-86. See in this particular pp. 56-63 and "Discussion," p. 79, *et seq.*

grave portent, however, is the readjustment by paranoid processes. If it succeeds, we have a persistent paranoid state with more or less of schizophrenic residue (paraphrenias of Kraepelin). If it fails, we have an unhappy jumble of schizophrenic projections, any hopeful aspect of which is lost through the destructive hateful attitude of the patient ("paranoid precox," and many now classed as hebephrenic).

Finally, there is the practically irremeable hebephrenic type in which destruction of the conflict is achieved by disintegration of the acquired socially adopted tendencies, and along with this a dilapidation of the evolved structures influencing manifestations of simple native tendencies. The motivation of such patients then becomes juvenile, childish, or even infantile.

That which we have called the prodromal period of schizophrenia often includes characteristic features which should receive special attention. One sees many who were "depressed" for a long time before the outbreak of frank psychosis. The behavior and utterances of these individuals reflects much unhappiness, but is to be distinguished from the psychosis of depression. They do not slow up physically and mentally nor suffer preoccupation with a certain few grief-provoking notions to the exclusion of more practical thinking. Expressed loosely, they feel not that all is lost as a consequence of personal sins and errors, but that all is wrong for some more or less inscrutable reason, which may or may not pertain closely to some weakness or inadequacy or peculiarity of the individual—often alleged results of masturbation. The situation is always a maladjustment to assumed personal inadequacy, but this may elude the patient's awareness entirely. While the true depression is preoccupied with thoughts of the enormity of the disaster, of punishment, hopelessness, and the like, the incipient schizophrenic is not the host of any simple content, but is burdened with pressing distresses and becomes more and more wrapped up in phantastic explanation and efforts at remedy. The distinction is one fundamentally dynamic: pure depression is practically a standstill of adjustment, the schizophrenic depression is a most unhappy struggle. Instead of literal or figurative sitting still, these people are striving to cut themselves off from painful stimuli, escape the situation by mystic and more or less extraordinary efforts, and justify themselves by heroic measures. While the pure

depression may end in suicide of a practical sort, the schizophrenic depression leads to fantastic methods of self-destruction often preceded by fear of being killed.

Perplexity also is an important phenomena of the incipient state. In this condition, extraconscious material influences perceptions of reality to such end that the patient becomes more and more entangled in contradictions, alternative notions, and illusions. Autochthonous thoughts appear and interfere unpleasantly with rational efforts. Insignificant characteristics of events persistently hold the attention and give rise to disturbing analogies.

Fear-states covering the gamut from phobia through terror, and from anxious feelings through apprehension, to the full-developed primitive panic,[10] are factors important in many incipient conditions. Whether or not rage—fighting fear—will make up part of the late picture depends in part on the character of the individual's former experience, in part on the particular explanatory delusions which he is entertaining.

All three of these phenomenon-groups combine in the evolution of most schizophrenic psychoses.

CASE 8.—Admitted December 24, 1922, *æt.* 24. The only surviving child of three; one, two years older, survived until the patient was about seven and one-half years old. The father living and well at 60, of a family showing considerable mental disorder; himself "excitable when engaged in business and things go wrong." Does not drink. The mother six years the father's junior, living and well, "quite aristocratic and proud of her family."

Gestation, birth and early development are reported to have been normal. No night terrors or nightmares can be recalled by the parents. There is some suggestion that the boy showed considerable determination to have his own way. Did well in school and graduated from a university. Puberty at 15; no mental changes noted at that time. Entered Naval Reserves and was given training in aviation, which was completed a few days before the Armistice. It is alleged that early in this training course he was caused to swim in ice cold water, following which he had some difficulty with his

[10] Affective experience related to fear can be divided into two major categories. Genetically it is evolved from the primordial experience including preliminaries to birth—the death-evil preconcept, as we have called it. See "Schizophrenia, Its Conservative and Malignant Features," *loc cit.*, and "The Oral Complex" (*Psychoanalytic Review*, XII, 1925, pp. 31-38). The differentiation proceeds along two lines, the basis lies in the external and internal character of reference. The former is through terror to fear. The latter is through apprehension to anxious states.

legs: some short time before the acute psychosis he said that he first became nervous "when they made me swim across the lake while I was in training—it was in February and was icy cold"; one gathers that he was under treatment thereafter for two or three months and it is interesting to note that during his psychosis he at times spoke of stiffness in his calf muscles.

On discharge from the service the father "noticed that he had dreamy spells. He was much more irritable, the least little thing seemed to agitate him." He resumed his schooling "but became very much worried by it so that he was very glad indeed to be home for the summer vacation." He then took a year's post-graduate course and entered employment in the fall of 1921. Things went fairly well until early in 1922.

He had never shown a great interest in women excepting for one prolonged engagement with a girl of about his age, whom he called "buddy." She taught a group of children and he a class of 13-year-old boys in Sunday School. During the years they were in different colleges "they wrote each other every few days—then he would let a month pass, thereafter writing apologies stating that he had been sick, when he hadn't been at all." His fiancée's mother remarks: "He was morally the cleanest boy I know. Very attentive and thoughtful but sometimes showed astonishing forgetfulness. He was the most wonderful man to her; always took such wonderful care of her—about a year ago, in a bunch of sorority girls and boys there was a little drinking going on, and he brought her right home because of it."

In February, 1922, the patient began to show insomnia, sometimes getting no sleep at night. There were times when he would cry; said his nerves were bad and that his legs would start twitching and bother him. Decided to have an operation to repair a deformity of his nose which had resulted from an injury at hockey. Was much disturbed after the use of local anæsthetic and on leaving the hospital called at his fiancée's home which he refused to leave, so that they put him up for the night. "At 5 a. m., he was singing and whistling in his room and having a great time. He came down and took a record my 14-year-old son had put on the victrola and took it out on the porch and threw it away." He returned to his home that day, and there "talked of the Ku Klux Klan and was down on Catholics. This all passed away in some 10 days."

In March, 1922, it was noticed that his work showed lack of initiative and inefficiency. His salary was reduced and this stimulated him to greater effort as a result of which he was to have received a raise at the time when psychosis became evident. In October one of his fellow employees sustained loss of an eye, for which the patient gave first aid. He was much upset that night, but "seemed to get over that pretty well." In November another employee, while standing alongside the patient, was caught in gearing and destroyed. The patient assisted in disengaging him. He did not mention the incident on returning home, wept to himself most of the night, discussed it with the family next morning, and took out accident insurance forthwith. "After the last accident at the plant his sleep was very much broken—would not want to go to bed—would take spells when he did not want to go to

bed, said he could not sleep." Around this time he spent a night at the fiancée's home and her mother reports: "He was afraid of his hands—they were swollen and then they were shrivelled up—but they were always red; some poinsettias were in his room and he had to have them taken out because they seemed bloody. My daughter was using a curling iron on her hair and he jumped up from the bed where he was lying and said that they should take it away, that it was pointed toward him."

On Thanksgiving Day the patient refused to wear sufficient clothing on a hunting trip, going out with khaki shirt and breeches and catching cold.

"Two or three weeks before Christmas . . . . [the fiancée and the patient] came out of a room and asked if they could get married at Christmas. His face got red and his eyes were bloodshot—didn't seem able to say anything but 'I love . . . . —I love her awful much—wanted to ask you—now feel better that I have.' A couple of days later he acted as if he had taken a shot of something." During the next two weeks he was observed to be abstracted and said that "I'm all wrong mentally." On the afternoon of December 20 he went with the fiancée for their marriage license. On reaching the Court House Square he straightened up and marched sharply at attention, executing the turns in a military fashion. To the question [required in that state] as to whether he was white or colored, he became very indignant. He remarked later to the girl that his city "needed an ensign." That evening he attended a banquet of his employing company, and received a bonus check. He was emotional and wept much during the banquet. Called on the fiancée for an hour thereafter, giving her the check and other souvenirs and "sat there and smiled and looked at the floor."

Next day, December 21, he went with a fellow employee on business to a city at some distance. On his way he attracted his companion's attention by crying. When questioned he made no response. He acted sufficiently peculiar so that he was sent back. At 4 o'clock the next morning he called his father by telephone, hanging up the receiver when the father answered. That morning he took the wrong train to work, walked a considerable distance across country, and said to his mother on reaching home: "Mother, you never told me anything about the relations of a man and woman after marriage." The father made some efforts in this direction, later that afternoon. The patient then went to his fiancée's home where he was observed to be badly confused. He said to her: "I think we ought to get married, sweetheart, don't you?" On being reminded that the wedding was set for two days thereafter, he said, "Oh! that's right." At 3 o'clock the next morning he was found standing on a bridge, a mile from home. He went to the fiancée's home, arriving very early in the morning. At breakfast "he would not eat anything until she had put a piece into her mouth—would chew when she told him, would say 'fast or hard, sweetheart?' Talked constantly of mixing chemicals, smelling things and testing waters." He was quite violent to his mother who visited him. Was given hypnotics and slept until about 1 a. m., December 24, then rose, "washed for a long, long time, stood on one leg and spun around, leapt around the room, took a spoonful of medicine

and played with it in his mouth, thereafter going and expectorating it in the bath room. Then put everything, towels, paper, etc., all in the commode. Took off all his clothes and got noisy, shouting for my son . . . . all the time, slamming the bath-room door and hitting the light." The police were called and the patient brought to the hospital.

When received the patient was in an acute catatonic excitement, very antagonistic. He insisted upon being nude, was destructive to clothing and took very little food. There was considerable rigidity, statuesque postures and auditory, gustatory, and olfactory hallucinations. Spoke of peculiar burning sensations in the skin of his face, the result of having poisonous gases blown upon him. At times he was in panic. In the next few days he remarked: "Oh! I know that I'm sick, but I don't know what's the matter." Misinterpreted everything which he heard, and hallucinated many obscene names applied to him and accusations of various sexual perversions. In response to these he frequently cried bitterly and threatened to "get even" with those thus abusing him. He was assaultive, but always in a defensive fashion. Had tactile hallucinations "like electrocution," and said that he was constantly bothered by odors "like that of analine dyes."

Became fairly accessible and showed marked improvement after each interview for a time, this change following a dream in which he was the recipient of pederasty and fellatio. In his convalescence he was at times perplexed and distressed as to his having venereal disease, although he said, "I have always been virtuous and know that I have never had any venereal disease." It was discovered that the distress which he referred to his legs might be due to enfeebled arches, and measures for their relief improved his confidence, somewhat. As his perplexity diminished, he made a rather paranoid readjustment, clinging to some somatic ideas, in which he was discharged.

CASE 24.—Admitted May 23, 1921, *æt.* 30; under care one year six months. Readmitted June 30, 1923; under care two months. Readmitted September 22, 1923; under care four and one-half months; transferred to St. Elizabeths. The eldest of five children, two brothers and two sisters younger. One, a brother 22, married. The father living and well at 65. The mother, 10 years her husband's junior, living and well. The patient resembles her in physique and physiognomy strikingly.

Gestation and birth reported normal. Night terrors, temper tantrums, enuresis, etc., denied. He was "very precocious" in learning to be tidy. Prior to the age of one he had become so active and was so given to standing while in a carriage, that he was spanked three times in close succession, after which he discontinued the practice. Up to the age of nine months he was very nervous and restless and suffered a great deal with colic. "He was very active and talkative by the end of the second year." During his third year he was burned by over-turning a container of hot potatoes—subsequent to this it was noted that he became increasingly quiet, much less showy in his activities. He was very easily weaned and this ease of discipline was also noticeable at the time that he was taught to sleep alone. The patient did well in school and finished high school at 18; the first evidence of mental

disorder occurred in the course of the last year. He then did two years of work in engineering and then quit the university and entered an office where he began to study law. This was part of a plan to become a thoroughly competent patent attorney.

Masturbation began at 12 and has continued. At the age of 25 he had his first heterosexual experience; has had but two since.

"The first signs of his illness took the form of some ideas of a self-deprecatory nature in regard to his English teacher, when he was about 17. Because he had been good in his work in this class, the teacher gradually omitted calling upon him and he developed the idea that this was because he was failing in his work." As the mother recalls it, this cleared up promptly after a talk in which the teacher explained that it was quite the contrary. In his 24th year when he was studying very hard and late at night he developed a disorder of the right arm and subsequently the right leg. The condition was painless, "at times when he attempted to grasp things he would do so with great force so as often to crush breakable things in his hands, at other times he could not grasp them at all, and always he was uncertain whether he could hold a thing or not." He showed depression and lack of initiative. He went to the West and there rehabilitated himself in three or four months. Resumed work in a patent office, whereupon the condition returned. Around this time he had a rather vague interest in a woman which led to nothing. This increased his depression and after an absence of about two and one-half years, he returned at the age of 26. He resumed work on specifications connected with patents and in four months "suffered another collapse." In 1917 he tried for the Officers' Training Camp, passed the physical examination, and was to have gone up a few days later for mental examination. The day preceding this appointment he began vomiting, with severe retching, from 11 p. m. to 2 p. m. the next day. He was much weakened by this and did not take the examination. He later registered for the draft. His father claimed exemption, but the patient declined it, his brother having already enlisted and gone. He was drafted and sent to Camp Meade on June 30, 1918. The second day there he was found to be acutely disturbed and was sent to the hospital. In interviews had in September, 1923, the patient relates that when he went to camp, the first two nights he did not sleep well, as he was occupied with planning how he could make most rapid progress in the Service. On the afternoon of the third day, he developed a condition of exaltation, went off by himself for a walk in the fields.

The following is *verbatim:*

"The first delusion I recall occurred shortly after my arrival at Camp Meade. It seemed to me that I took a very enjoyable walk about the entire camp and was so exhilarated that it seemed to me that I was just touching the high spots and in actuality really flying over the surface. This dream or rather walking dream occurred at sunset about the second or third evening of my arrival at the camp. I remember after walking or flying rapidly for a short time about the entire encampment, I came to the sun-warmed platform

of a warehouse. This warm surface felt very enjoyable and nice to my touch, so I rested on its surface for a while and enjoyed the various activities which I could observe. After resting here a while I continued my walk dream flight until reaching a pump. Here I stopped a while and rested on a log alongside of the pump and was much interested in observing the various groups of soldiers who came to the pump to secure a supply of drinking water. Shortly after this episode at the pump, it became dark and I then endeavored to retrace my steps to the quarters where I was encamped. After several blunders in locating the proper shelter I reached the right encampment.

"The next day I was feeling too ill to drill on the field and secured permission of my captain to rest from maneuvers that day. After this I became quite sick and only remember in a vague indefinite fashion being carried or partially carried as I staggered along to the camp doctor.

"For three months [actually six weeks: considered as 'very exaggerated form of maniacal excitement; suffered from visual hallucinations and was dissociated in all spheres'] following the foregoing episodes I was quartered at the camp hospital and remember very little except that during this time my mind was occupied with dreams of vast hordes of soldiers being drilled in the hot sun, much against their protest, until they were about ready for rebellion. I seemed to take no part in these maneuvers except as an observer. Seems to me that they thought that I was in some way responsible for the severe drilling that they were being subjected to.

"I remember being driven in a motor omnibus to St. Elizabeths Hospital. This was a trip of 25 or 30 miles and I had two illusions or hallucinations during the progress of the ride.

"The first concerned the nature of the ground over which we progressed. It seemed to me as though we were driving through a rubber plantation. I could see evidences of tropical vegetation and also see what I thought to be black people working collecting gum from the rubber trees. This interested me during the first part of the 30-mile drive and then it seemed to me as though we were being pursued by an automobile driven by a person with whom I had had some business relations when in Los Angeles. The pursuing car never succeeded in overtaking us and for the remainder of the trip I was keenly interested in escaping from the pursuer or pursuers. The road over which we traveled seemed to be crossed at frequent intervals by other roads and at each intersecting point this car following us would seem to shoot by—sometimes ahead and sometimes behind us, but evidently it would be off the right track and thereby we succeeded in not being overtaken.

"On arrival at St. Elizabeths I was much impressed by the terraced lawns around the entrance to the hospital and by the masses of red flowers blooming profusely about the entrance. I had no idea where I was being taken to and thought, perhaps, it was a monastery or some retreat located in Switzerland." This idea was elaborated into a recurrent fantasy somewhat as follows: "A monastery or some Catholic church—in the basement or cellar was a thick layer of grease or tallow which, it seemed, might be renderings from dead bodies, in what corresponded to the Catholic purgatory. I used to see

an old priest walking in through this mushy layer, and then my cousin who is a very light and spirited girl [a Catholic six years younger than the patient who lived with them from his tenth to fifteenth year] would join him in his walk." It appeared that he had gotten caught in this subterranean cavern and was tolling a bell at the time. He had lost hope of ever being remembered. It seemed that the priest may have lost faith in humanity, still he seemed a faithful follower of the church and a very lovable person.

"My year or more [actually only 11 months] at St. Elizabeths was filled with dreams, most of them very pleasant, but unfortunately they made no lasting impression upon my mind and I do not recall the great majority sufficiently clear to express them in words.

"I remember that in one ward I was under the delusion that I was Sitting Bull, an Indian chieftain, whom I thought at the time was living in the neighborhood of the Montana mountains. This chief, whom I seemed to feel that I saw, had been captured by the United States regulars and was in dreadful fear of torture. There was an attendant, who because of his cowboy dress conveyed to me the impression that he was Buffalo Bill's son and I liked this boy very much and at the same time stood in fear of his actions."

["Admitted in a confused manner, showing considerable psycho-motor restlessness. Stream of talk free, irrelevant and incoherent. Emotional status and attitude of mind: patient lies in bed, at times quiet, then chatters senseless unconnected words and phrases. Patient evidently has both hallucinations and delusions. Disoriented in all spheres. Could give no sensible answers to questions."]

In addition to this material, he recalls another series which pertain more or less directly to Napoleon, the content of which occupied a portion of several excitements. He is sure that the first occurred at St. Elizabeths. Napoleon has always been a sort of ideal to him and in the course of the illness, one of the dramatizations took this form: Napoleon would appear in the midst of battle (European war), would ascend a hilltop and stand gazing about, expectorate into the palm of his hand and slap the hands together, whereupon lightning-like phenomena would proceed from between them; this lightning was not destructive, but was a channel by which he issued commands to his subordinate officers. Of the other fantasies, perhaps the following is the most remarkable: again and again Napoleon would go for the most intensely enjoyable rides on a remarkable black mare. In the course of these enjoyable rides the element of battle would intrude. The mare would change to an extraordinary black stallion and in the course of the fantasy, Napoleon would secure semen from the yard of the stallion, which in turn he slapped between his hands with the production of lightning-like flame which similarly proceeded to invigorate and direct his subordinate officers. There was a quite clear identification of the patient with the hero figure throughout these fantasies, as was the case in most of the following:

"For many hours I was entertained in my room by the actions of a fly on the surface of a small table which used to be used in serving my meals. This fly I termed a 'Benjamin Franklin' fly and it seemed to me that it

was endowed with superhuman intelligence and it used to keep me entertained by its antics on the top of the table.

"At Laurel Sanitarium [removed there, by parents] I used to dream occasionally of being [perhaps a bull] locked in close sexual embrace with a cow and flying rapidly over the surface of the earth from one rich luxuriant valley to another. This cow seemed to embody or seemed to be the embodiment of Miss S. and she seemed to take a maternal interest in my companionship. This dream of being a cow [he cannot recall this one] and flying in close embrace with a cow was the first of a series of dreams in which the other party always seemed to be Miss S. [See insert below concerning Miss S.]

"I remember thinking that a picture hanging on the wall of the Laurel Sanitorium was Miss S. and that she was the Czarina of Russia. Myself and the other patients of the hospital, I thought in the dream state, were very much opposed to the treatment and the meals which we were receiving and I planned a petition to Miss S. when she made her annual Christmas visit to the hospital for release from the place. This petition which I had in mind was of course never presented and the lady never made a visit so far as I dreamed but I thought that her presence had been evidenced by a supply of candy which we received during the holidays and by a thorough cleaning of the hospital.

"I recall a young fellow named Curtis whom I thought to be the son of a Turkish nobleman and, perhaps, the crown prince of Turkey. He interested me very much—first, perhaps, because of his soldier-like bearing and refinement of features and later on because he gave me what is known as the 'queen's salute' [cannot recall]. I dreamed or had hallucinations to the effect that Curtis was visiting the United States and carried with him a retinue of servants and harem, and that it was my duty to entertain him during his stay in the United States. I arranged, in my dreams, for his entertainment at dinner parties, cafes, and theatre parties. Later when he returned as I thought to Turkey it seemed that I went along with him and became acquainted with Turkish and oriental customs." He has additional recollection to the effect that while in Turkey he was connected with the rescue of a great many women who had been falsely imprisoned, and that they were brought before him in very bedraggled condition, after which he caused their rehabilitation.

"Leaving Laurel Sanitarium I went to the Trenton State Hospital [admitted July 17, 1920] and while there I had a series of dreams or hallucinations. One again was concerned with Russia and it seemed to me that Miss S. and her sister appeared to me once when I was sitting alone in the ward and once when in the yard. On both occasions they were dressed in skating costumes and I enjoyed skating with them over the large limitless expanse of Russian ice.

"For a time my dream thoughts were concerned with the feasibility of some perpetual motion arrangement. I knew that perpetual motion is not practical nor thought feasible by the United States patent office and yet my thoughts seemed to center about the fact that this earth is supposed to be

continually in motion and that would seem to point to the fact that one form of perpetual motion, at least, is known. Then along with this trend of thought I thought of the universe, and forgetting what little I knew of astronomy I used to ponder on what kept the stars in their orbits and wonder as to the whole meaning of life and creation. This thought was not conscious thought but was indulged in by myself in a condition of dream sleep.

"From Trenton Hospital I returned to Laurel Sanitarium and during each of my bad spells was entertained by dreams of a very fantastic content. In one of these dreams I seemed to see a picture of North and South America as though the under surface of these two continents was plated with gold. It seemed very delightful in the gold lined cavity existing under the two continents of North and South America and I delighted in drifting about thinking that I was reposing contentedly on a bark." As originally related, the caverns in this case were under the Central American portion of the Western Hemisphere and it seemed that the South American portion was female and the North, male. This fantasy is intimately related to another series which will be mentioned after that of the Egyptian slave.

"From the Laurel Sanitarium I went to Sawyer's Sanitarium at Marion, Ohio. The first continuous dream I remember at this latter place was concerning Monte Carlo. It seemed that Monte Carlo was a flourishing gambling establishment located in the center of Africa and that the two colored hydro attendants were serving as croupiers. I thought that Jack Johnson was the proprietor of the gambling establishment, and at the same time as it seemed to me he was the king of Africa. The establishment seemed to have many floors similar to a department store and these different floors were reached by an elevator which it seemed to me ran up and down through the center of the earth. On each floor was gambling paraphernalia and as the sum of a person's bets reached larger volume he was permitted to gamble on a higher floor. The top floor was the most exclusive one of the establishment and each evening the winner of that night's play was regaled by the appearance and dancing of Mrs. Jack Johnson, the colored queen of Africa.

"There was a young lady at the Sawyer Sanitarium who interested me very much and during my bad spells I often saw her in visionary form dancing before me in the room. It seemed to me as though she was supplied with a pair of wings, not suggestive of angels but merely to further her agility and ease in dancing. I used to dream while at Sawyer Sanitarium and when I was slightly excited that I was in Russia. There was one young man, a major in the British aviation service, whom I was thrown into close association with and whom I always dreamed of as being one of the Russian nobility. Several of the nurses at this sanitarium I always thought of when abnormal as being Russian princesses.

"At the Sheppard & Enoch Pratt Hospital I have had many interesting and peculiar dreams, most of them occurring when I was confined to ward three [for disturbed patients]. I remember a series of dreams in which I thought myself to be an Egyptian slave and I worked very hard and faithfully pacing up and down one of the rooms on the third ward and sticking my finger into a little opening in the wall. It seemed to me for a time as though my task

was to scrape the sand forming the cement from out of this opening and I worked apparently for hours at the useless task." In another fantasy the greatest pyramid is being built with tremendous labor. Great numbers of elephants are employed under the domination and guidance of a milk-white elephant, vaguely identified with the patient. In the interior of the unfinished pyramid is a pool, and as the elephants become worn out they climb over the edge and fall into the pool—this was not so much fatal to them, rather their lives left them and were deposited in a small cupboard-like space elsewhere. Another fantasy clearly recalled was to the effect that the patient was one of a number occupied with the work of building a great pyramid. On the outside of this, life was very hard, rigorous and painful. From the exterior, where he worked, there was a tortuous and difficult channel with a peculiar kind of entrance by pushing back a stone, and this passage led to the interior which was superbly gilded, hung with diamonds and precious stones [which no one thought of taking but enjoyed] and contained a great pool in which one floated in small vessels in sublime contentment.

" Miss S. again featured prominently for a time in my dreams. It seemed to me for a while that she had strayed from the straight and narrow path and had become a very high class woman of the street. I had fallen into her toils and had to obtain for her a supply of opium which it seemed to me she was very determined to obtain and use. I do not recall how I thought I obtained this drug but I remember that it was my task to obtain it and that I always pleaded with the user to break away from the habit and endeavor to regain her former place in society." It developed that Miss S. is the mother ideal, having all the great virtues of the true mother, with all the real mother's defects replaced by their opposite virtues. In a fantasy pertaining to Miss S. while in this hospital, she desired the life-giving opium. She lay in his bed and he struggled and struggled to keep out of it, but the attendants would pick him up from the floor and put him in. He could reproduce no thoughts which followed his being put into his bed under these circumstances. " For a while I used to dream almost nightly that I was in Russia and that Miss S. was a lady of nobility and very fond of classical dancing. I would be granted the privilege of a private audience and she would appear before me on a stage draped with heavy velvet hangings of a golden brown color then I would become very much interested in the display of nude dancing which followed. For a time I was entertained during these bad spells by arranging for a meeting in the woods. It seemed to me that I had constructed a retreat of logs somewhere in the vicinity of this institution and that Miss S. was to drive over from Washington and spend a pleasant evening with me. I remember after making these arrangements and waiting in vain many evenings when finally the lady appeared and we spent a very pleasant time together.

"Another dream concerning primarily Miss S.'s sister at whose funeral I had acted as one of the pall bearers—I dreamed that this girl's spirit had become embodied in a pigeon ring, such a ring as I had often placed upon the leg of a bird. I dreamed that the pigeon carrying this particular ring had flown to Peru, there died and that the ring was placed on board a ship along

with a quantity of guano. Then it seemed to me that Miss S.'s sister, Lilian, reached this country in much the same form that she had embodied when she died. Her relatives and friends with the exception of myself would not believe that the girl had returned to life but I remember dreaming that I had no doubts as to her identity. For a time after this it seemed to me that Miss S. appeared in the form of a turtle carrying a loaf of bread under her arm. The bread was to be used to nourish her deceased sister. It seemed that Miss S. was always headed for the cemetery and I think that this delusion was, perhaps, furthered by the fact that outside of the room which I had on ward three some excavating was being done. The ditch which had been dug looked somewhat like an open grave and suggested to me a cemetery.

"Some of my dreams at this institution and a number of those which I have had at other institutions were concerned with Chinese. I used to dream here, for instance, that the god of the Chinese people made his home on the top of the mountain and that in order to keep his subjects happy and employed he used to direct that they tunnel continuously round and round through the mountain, with the idea that by working hard and faithfully they would in the next world obtain a higher position in society. I used to see a Chinese princess who it seemed to me had a position upon the cap of this mountain and she was fed on opium and was there as an incentive to the workers below to do their best in anticipation of marriage with her.

"My last dream or hallucination was concerning spies. For several days when I was ill at home I questioned my mother as to the identity of my brother and asked her if she thought he was a true soldier of the United States Army and if my brother was in the secret service agency of some foreign government. This trend of spy thought persisted for a couple of days when I returned to this institution. I remember picking out in my dream sleep about 10 people around this institution whom, because of their foreign language, made me feel that, perhaps, they were not true to the United States. I directed Mr. R. [an attendant] to have them executed as spies at sunrise, later in the evening I called him in and told him that they had better be shot at once because I thought, perhaps, they might escape before morning. Mr. R. demurred at this request to shoot the suspected men so I told him that if he would bring them to me I would be pleased to do the shooting. For a while during the second evening of my stay here I thought that Mr. S. [night supervisor] and Mr. R. were connected with foreign governments, Mr. S. being a colonel in the Scottish Army and Mr. R. being an Italian diplomat in the service of his government. I thought it was encumbent upon me to invite them to my house and arrange for their entertainment. I remember that the party which I had planned never came off—that I was much disappointed because Colonel S. was unavoidably detained."

Following the wave of illness in which these productions were secured the patient left the hospital in one of his stupor equivalents which passed as normal periods. Sleeplessness gradually developed and he was brought here before disturbance made itself evident. By the first of October he was very restless, boisterous, sleepless and silly. In an interview with the writer, he saw the Pope standing in the shadows behind the physician's chair [patient

is Presbyterian; the mother's family is Catholic]. He improved rapidly and on October 8 produced the following:

"My last illness was the mildest of any similar experiences which I have passed through during the last five years. The attack was so mild that I do not think I lost consciousness during the entire period. I was slightly stimulated for several days and really enjoyed the time when I was slightly abnormal because then my thoughts were very pleasant and moved very rapidly.

"I recall believing that the second ward where I am at present located was the quarters of a Masonic fraternity and various gentlemen there were putting me through a mild ritualistic test. I thought, for some reason, that I was a Mason of rather high degree and that it was my duty to instruct some of the younger men on the ward and teach them the sacredness of the mutual vows which we had all taken in this fraternity. I stood before one of the older men on the ward, thinking that he was an exalted Mason, and held a stiff position as long as possible. While standing very still and tense, I wanted to faint and be revived by some one secret sign which it seemed to me the senior members of this wonderful fraternity were aware of and could put into play at their wish. After standing still as long as possible I fell over against the wall and gradually assumed various well-known poses until I became tired of the phantom play which I was indulging in. For awhile I seemed to pose as Mercury, then tiring of this, I assumed various other well-known poses and finally took the position of Rodin's Thinker and held this last pose for a considerable length of time. Later when my excitement subsided a little I realized that no one else was interested in what I was doing and so after reading awhile retired for the evening.

"The next evening I got to thinking about the battle of the Alamo and for a long time my mind was occupied in a dream sort of way, with a rehearsal of the events which I believe took place at this well-known battle.

"After thinking along this line for a while I became interested in an art catalogue of the Corcoran Gallery in Washington and halted for a considerable length of time at the picture of Stuart's painting of Washington. This picture appealed to me very strongly for reasons which I will not trouble to write here and I even went so far as to show it to Mr. McK. without any comment as to its significance.

"Since coming here this last time my interests in horticulture, medicine and occupational therapy have revived and at present I wish to center my thought upon one of these three subjects but as yet have not decided which is best to follow. Horticulture has been of interest to me practically all my life and the beautiful flowers which are to be found around this institution are very interesting to me and I should like to know more about them in a scientific fashion. I have been thinking for some months of taking up the study of medicine but just at the present am undecided whether I want to study osteopathy, chiropractic or general medicine. As occupational therapy has helped me considerably I have come to the belief that it is a very helpful and a large growing field of endeavor and I should like to go into this subject in great detail at some time with a view to following that as an avocation."

The patient has been under practically continuous treatment in St. Elizabeths since August 26, 1924. The most recent note is as follows: "Has come out of one of his stupors almost completely. He answers slowly, relevantly and coherently; denies psychotic content and has some realization of the malady from which he suffers. He is oriented. Is neat in appearance. Has had many stuporous periods during the past three months and does not emerge as before. Is seclusive on the ward. Works a little.

CASE 52.—*Æt.* 38, admitted November 12, 1924; discharged unimproved seven and one-half months later. The second in a family of four; the other three girls, married. The father died 22 years ago of cardiovascular renal disease. The mother five years her husband's junior, living and well. A maternal cousin had mental disorder. Little is known of the early life of the patient. He graduated in pharmacy at the age of 19, and went to work immediately. Fourteen years ago he set up in business for himself and has been most successful. The mother and one of the sisters lived over his store. He has had but 17 days vacation in 14 years. His work kept him at the store from 7 a. m. until 11 p. m., with the exception of two nights a week, which he would spend with his mother and sister. While popular as a boy, he was not much of a mixer and had very little social outlet, though much respected in the community.

His sex life began at 13 with masturbation, which continued to the 19th year, being then discontinued "because I began having wet dreams and they satisfied me, I didn't have any more desire, I guess." His father died in his 17th year—"I was too young to appreciate it, you know." Says that he had been one of a gang of boys that practiced mutual masturbation, but that he has had no other homosexual experience. In his twenties he had his first heterosexual experience, "All right, but it was weak." Since then he has had three or four other contacts with women, always unsatisfactory, usually due to precocious emission, complicated by defective erection. The last was about four years ago and was a failure. He feels that this situation and the continuance of contentless sexual dreams throughout his life ("I'd just wake up, knowing I had had one, so slight they barely wet the sheet"), have had something to do with periods of tremor and "nervousness" in public places. It seems that he had gradually become more uncomfortable in the past two years whenever away from the store out of doors.

Some six months before admission he had notions that he had developed an hernia. He decided that he should sell his business. He slept so badly that he took chloral by mouth. Within the next two months he showed agitation and depression concerning the hernia. A brother-in-law came to stay with him to convalesce from a tonsillectomy which had been performed for the relief of rheumatism. The patient decided that his own tonsils were troublesome, had them examined and found that they were in bad condition. This worried him although the family attempted to pursuade him to undergo operation. He sold his business at a fair profit early in September, and on the 22d of that month consented to tonsillectomy. He was afraid that he would die of the operation. His mental state deteriorated progressively. By

October 1 he was quite sleepless. He was taken to see a cinema, "The Ten Commandments." This worried him considerably. In the morning of November 3 he drank iodine and cut his throat with a razor blade. On admission he said that he could not understand the attempt on his life as he felt afraid to die. The second night in the hospital he dreamed that "there was blood coming from my mouth, and I was dead." It woke him up, but he realized it had been a dream at once. In the early days of his stay he showed a persistent stupor-like reaction in which he appeared superficially in very fair condition but actually wore a mask-like expression and paid no attention to flies, etc. lighting on his face. He was constantly apprehensive and at times had acute attacks of general tremor. The seventh day in the hospital he made an impulsive attempt on his life, beating his head against a brick wall. Seen 25 minutes later he said that he had answered "all their questions"; this seemed to relate to an idea that the attendants had obtained from his mind the answers to a number of very personal questions without his having said anything; that they had discovered the crimes which he had committed and for which he was to be punished; to wit, having very frequently lain in bed with his mother and having engaged in masturbatory procedures upon himself under these circumstances; and having handled the person of Ruth, the daughter of a friend of his. He had seen and heard Ruth and her father on the ward, the latter having spoken of shooting him. He was "drilled" a great deal on the subject of his relation to his mother, the auditory hallucinosis being so acute that he repeatedly asked, "Don't you hear them too." He asked the physician to "stop playing that machine on me," the machine being a device to influence his mind. He became inaccessible and progressed into an unhappy paranoid dilapidation in which he was removed by the family.

CASE 75.—Admitted July 22, 1925, *æt.* 26; second of two boys; the elder 30, unmarried. The father died following accidental infection when the boy was about 20; he was "deeply interested in the upbringing of the children. Did more for them than he should have done—swimming, shooting and the like. They were very close to him." The mother living and well, seven years her husband's junior. Mental disorder on both sides of the family. Gestation, birth and early development reported as normal. The mother recalls that as a child the patient was "fascinated by clothes and loved to dress as a girl. Has always loved costumes and finery." He was rather precocious in development and for years entertained himself with sexual fantasies. "He matured earlier than the average boy and was rather more sophisticated." "He did not take the same interest in clothes that most boys take." "He read Petronius, etc., and was full of curiosity about sexual matters but he never sowed any wild oats. He was exceedingly cautious and loose women disgusted him. He regarded sexual intercourse in itself as an animal act." To young girls "he always made himself most charming but . . . . had more in common with older women . . . . he was taught to have great respect for women."

The mother taught her sons to realize that she never felt safe until they were in at night. They always reported in her bed room and discussed what they had been doing. The father stressed to him that he should never cause a girl to love him until he was prepared to offer himself to her in marriage. "This necessitates several conditions. First and foremost, a clean past life."

Some of his early associates remark, "He was a most interesting talker with great independence and poise. He was not widely popular, not a man's man and some people thought him conceited, pompous and a treacherous cat. He was a bit uncertain as a friend. He did not stand by friends when they got into trouble. He was extremely selfish." In college, he felt at one time that he was "near a breakdown"; details are lacking.

He went to Europe to complete his studies and there found his morals a source of much levity and crude by-play on the part of fellow students. On one occasion he went with a friend to a house in which a peep show was maintained. What he observed "revolted" him. He remarked that the atmosphere of the city in which he was located was all sex and that he was unnaturally repressed. He became concerned about his health, feeling that his tonsils ailed him; did much gagging and belching. He began to think of getting married; "most peculiar emotions have developed in my adolescent nature." The girl he selected had already found a satisfactory swain and and he was considerably upset when she declined him. The sexual horse-play at his school increased. He began to find certain of the teachers repulsive.

Developed an interest in automatic writing and felt that he was receiving communications from deceased relatives. An acute disorder of sleep appeared. Became so uncomfortable that he concluded he was suffering an attack of brain fever. Went to visit a relative, previously making a memorandum which he carried with him, as follows: "I feel under a hypnotic power of someone. And if I should marry, it will be against my will power." Immediately before this trip he had consulted a physician on the assumption that he had venereal disease. On arriving at the neighboring city he complained that he had a dual personality, that he was hypnotized, and that he was hermaphroditic; "I know the trouble of the whole matter; it's sex." He talked much to the physician who was called, of censorship from his father, being married, having attempted Coué's method, and that he was a woman—having been castrated. Great excitement ensued; he became disturbed and combative and much hallucinated. After some weeks of care he was returned to the United States.

On admission to this hospital he was much disturbed and made many attempts to harm himself. There was a great deal of antagonism and pugnacity, this frequently most impulsive. Went nude at times and often refused his meals; had feelings that he was being impersonated by some one outside the hospital.

His marked improvement was foreshadowed in a dream somewhat as follows: he stood naked in a close triangle formed on the right by a board fence, on the left by a large horse and behind him a tub full of water. He

became accessible, shortly afterwards. The following is an extract of his productions concerning the psychosis:

"My brother and I were brought up on fear, and it was this fear of venereal disease that kept us from asserting our manhood. Mother brought us up and it was from her that we got most of our instructions. She took the dominant part until anything went radically wrong. The chauffeur was the first source of information regarding these matters. Later mother explained certain things and talked of them as not clean. Sex had a great deal to do with my illness. I had masturbated. I had never done anything worse than that. I felt that I should have been with a woman.

"I was run down and lonely. The girl of whom I have spoken was coming to the city. I expected to propose and was therefore particularly anxious to see her. I felt that she was coming to settle the matter and that she expected a proposal. She told me about her other sweetheart and later told me that she was going to cable him instructions to announce her engagement. I had the impression that she was in love with me, but that I was not sufficiently in love with her to make the proposal. I felt I had led her on. This matter worried me a great deal. The chief attraction between us was a mental one, not a physical one.

"About a month before I left [the city in which he was in school] there was a young chap visiting the house. I was playing extremely hard and drinking a good deal. My main reason for drinking was to be sociable—never made me ugly—always drank from sociability. One evening I was with this young friend of mine and we picked up a couple girls. You know the sort that make their livelihood by dancing and that sort of thing. We fooled around with them and I would have liked to have a wild time, but they did not appeal to me. Whenever it comes to that type of girl that I could take liberties with, the romance always seems to be lacking. Sometimes their voices were not pleasing, or possibly it was the odor. This evening, I had dinner with this friend and I had a number of drinks. We then went to a dive. There were a lot of young ladies in negligee and I picked out what seemed to be the prettiest one. I petted her, but had no desires to go to bed with her. I think this rather provoked the girl that I didn't. My friend was off upstairs with his girl. Then following this, we went to a peep-show, which was low and vulgar. The next day, I felt very cheap, because of the vulgarity of the thing, and the money I had spent. At the time I had enjoyed it, because I had just enough liquor in me. The actions of my friend revolted me. I thought it was so crude and bestial [he had observed the act] I hated to see my friend go to bed with that girl. [Asked as to which girl seemed to be the more interesting after this performance.] My girl still was most interesting: I felt sorry for her, feeling that it was too bad that anybody should have to earn their livelihood in this way. Therefore, I gave her 30 francs. At the peep-show, they performed all the sexual aberrations. I had a bad taste in my stomach for a week. That night I felt it was a very valuable experience, but it all seemed a sham. The picture that other fellows had painted of a good time did not seem to come through, it all seemed very

sordid. My sex interests were probably stronger when I was younger: I was near a breakdown in . . . . [college].

"I was working hard, drinking, and felt at times as if I were on the verge of a breakdown. I was acutely self-conscious, I lacked energy, I was mentally slow, I thought that people did not like me. My hearing seemed poor, and I would often fail to answer questions, I suppose because I was preoccupied. The day following the episode I saw my friend and we went to a dance. He showed one of the girls very much attention, and since the girl did not like it, I felt worried and responsible. Hearing French [much spoken in this city] all the time rather worried me. One of the girls asked me why I was preoccupied. It was no one particular thing. I was not happy and I was trying to find out what particular thing I liked.

"Mother had always been interested in spiritualism, and I always rather pooh-poohed the idea. For some reason or other, I began to have an idea that I would try some automatic handwriting. I put a pencil in my hand and it maneuvered around. After two or three twitches, the pencil started writing, but I had some difficulty at first, because the hand would go off the page. Then things seemed to be under control and I wrote two or three pages. My hand just dancing over the paper. It was all very spooky and then I read it. It was incoherent, and difficult to understand, but one line in particular stood out. It was a line from my grandmother, which was as follows: 'Life after death, very enjoyable' signed Grandmother, father, and other members of the family who are dead. When I attempted to do this automatic writing, father's photograph was on the desk beside me. I felt as if somebody were behind me. I also got the idea that my father was unhappy in his last illness, that there had been something wrong in the last illness. I had the idea that he was not keen to live, and was glad to die from the operation. He was like a brother to me. At that time I was anxious to leave but I was bored and lonely. I would have gotten out of town and gone home on the next boat if it had not been that I was staying for the examinations.

"I was unhappy, I was specially worried, and the doctor told me to go away, but I lacked self-confidence. I was afraid to go away and be sick where I knew nobody. So I went to . . . . and there at the theatre one night, it was practically impossible for me to follow the play. There seemed to be a congestion in my brain, my hands were sweaty, and I was extremely self-conscious. It seemed as if people were looking at me and I felt as if I had talked out loud. I felt in a panic, but there was really no adequate reason for this. I was not conscious of what took place. I remember being in two nursing homes, but I don't remember being transferred from one to another. I remember fighting with the nurses. I had a feeling of affection toward the nurse, and I had some idea of proposing, but I got out of that situation without any embarrassment. There was another nurse, a rather simple little thing, but nothing special came of that. I had an idea that they were trying to play tricks on me, and they were not playing square. There were some ideas of being persecuted. Sex had a great deal to do with the sickness.

In the first nursing home they gave me some modelling clay, and I attempted to make figures. It seems my mentality could not have been more than that of about 10 years and I worked in a sort of daze. All the models seemed to take the form of male genitals, and this was both fascinating and repulsive to me. It seemed as if I was the medium for another artist. I rather liked the doctor. He was a big fellow, and I felt he sort of had a hypnotic influence over me. When I entered the nursing home, I told him everything, and then later I felt that he was not looking out for my interests. I felt that there was a negro in the woodpile. One night I had a terrible time and I felt as if my brain were disintegrating. I began to hear voices, also, at about that time. The first time I heard voices was probably one night when there was a special nurse on duty, and there was a sort of screen between my bed and her desk. There were some white bed clothes on the floor, and this made me rather suspicious. The nurse was weeping, coughing, and then later said that they would perform an operation. I thought I had been chloroformed when I woke up the next morning, and I thought that an operation had been done on my brain in order that my brain might be turned around, in order to give me a great deal of will power. Voices said the operation had failed. Another voice said that the doctor whom I wanted was not available, and then said he had been bribed to perform the operation by Mr. P. [father of the alleged sweetheart]. At one time in the nursing home, I had the idea that someone was trying to shoot the doctor from the window of an adjoining building, and I tried to protect him by running in front of him.

"In the second nursing home, the voices were worse. I would hear them just as if I had telegraph receivers on my ears. They would say 'hello, old friend, you are away on a trip to the country. Don't you believe in brotherly love? It is the greatest thing in the world.' Then later, in the second nursing home, when I would sit in certain chairs the apparatus would commence, and it would only say 's.o.b.' 's.o.b.,' and repeat until I was scared to sit on the chair. The bath tub was the same way. It was just as if there was an electric attachment to the bath tub, that started when I got in. I got weak and clammy. It was spooky.

"We motored to the boat. There were a couple of young chaps along, and I didn't know that mother was on the boat until we had gotten out to sea. She had come up to talk to me on the deck, and the doctor offered me a cigarette. He also offered mother one. She said 'don't you think you had better give up cigarettes?' and it seemed to me as if there was something wrong. I felt that for every cigarette I smoked, mother had to sleep with a sailor. This gave me such a shock that I said I would be the king's cock sucker. There was fear, and I felt that I should make some sacrifice to protect my mother. The doctor said at one time 'you are not on to ship ways,' and I felt, for some reason, that the doctor might have the power to nationalize women, and when I didn't see mother for several days, I felt that something had happened to her, or that she was cutting me. I used to be afraid of the deck chairs, and when I would sit down I would hear words like whore—more—war, etc. When the wind was in a certain direction, the port

holes would give me objectionable ideas. When I made the remark about the king's cock sucker, Miss . . . . got up and said she would go to the other side of the boat, in order to see another boat that was passing. I took this to mean that virtuous Miss . . . . was to be assaulted.

"On the steamship the nurse slept in the bunk place, so that he would awaken in case I tried to go out of the room. The morning following we were on deck and I asked to put on his spectacles and he remarked that I had eyes like mother's. I thought this meant that I had slept with mother, and had gotten her eyes. I had an idea he was a crook. Later, I saw writing on the wall just as plain as I could see anything, and they were the names . . . . and . . . . Then I saw two crosses in the eyes of the nurse, and I put my fingers on my forehead and wrote *Judas*. From that time I began to be afraid of him, more from my own actions than from anything he did. I was afraid I would be kidnapped by him. I had the idea that they had locked me up for some reason that I didn't understand. The male nurses scared me. They came into the room about eight o'clock and gave me paraldehyde. It had a revolting taste and odor. I thought it did funny things to me. On one night, I threw up my supper, and then went to sleep. When I woke up, my nostrils were dirty, and I thought they had made me rub my nose in the vomitus. At times, my stomach would seem to swell up specially when I had indigestion. And also, when I was shaved, my spine seemed loose, and when I put my head very far back, it seemed as though my spine buckled up. I also thought I was a hermaphrodite. I thought that I was going to become a woman. When my stomach swelled up from indigestion, I thought that I was pregnant. The doctor explained the term hermaphrodite to me in the second nursing home, when I thought I was pregnant. I had the idea afterwards that my penis would drop off. They gave me paraldehyde at night and salts in the morning, and I didn't know what happened at night. The voices never explained what happened at night. There was no desire on my part to become a woman. I did not have a fear of perversion, because I had never slept with a woman. I was over-suppressed. I had the fear that I would be more attracted by the male. I always thought the male figure more beautiful than the female. At the start of my sickness, the only perverted desire I had was a wish to throw my arms around persons whom I developed a fondness for.

"The walks on deck were almost too much for me. They would give me four pills, and this would make my face flush, and I would look healthy, and then they would parade me on the deck. In the cabin, I would feel faint, and I thought my legs would shrivel. It seemed on deck as if I were losing all my weight."

GASTRO-INTESTINAL MOTOR FUNCTIONS IN SCHIZOPHRENIA.

Roentgenologic Observations.*

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Since the preliminary report on the relationship of gastro-intestinal motor functions to various personality disorders was made,[2] it has been my privilege to make observations on a larger number of cases. In general, the findings accord with those already noted. It is my intention at this time to present a detailed report of observations on 51 cases diagnosed clinically as schizophrenia. This group was composed of 31 men and 20 women of different ages, who presented a great variety of clinical manifestations. No patient was included in this group who was suffering from physical illness. All of these patients and their radiograms were examined by members of the staff of the hospital and by visiting internists from the New York Hospital.

Before presenting some of the details of these observations it may be helpful to comment briefly upon some features of gastro-intestinal motor functions. It has been commonly observed that visceral form, position, tonus, and motility vary according to the tension of the abdominal wall, and according to the bodily build of the individual. The latter relationship is referred to as the habitus of the individual. According to habitus, individuals have been divided into three classes, the hypersthenic, sthenic, and asthenic. The hypersthenic individual has a robust frame, short, broad and deep thorax and long abdomen. In this type the visceral position is highest and tonus and motility are maximum. Strongly contrasting with this type the asthenic individual is of slight build, has a long, narrow and shallow thorax, and short abdomen. In the asthenic type the visceral position is lowest, and tonus and motility

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are poorest. The sthenic type is essentially a compromise between the hypersthenic and asthenic types.

It should be understood that the types of individuals just described are normal types and that the habitus of the particular individual suggests abnormality only when it is not true to type. Obviously the habitus (particularly visceral position) is modified by relaxation of the abdominal wall and by variations from the normal height-weight ratio. Note was made of the habitus, height, weight, and degree of abdominal relaxation in each of this group of patients and I intend to show that the variations in visceral form, position, tonus and motility due to the above-mentioned factors are relatively unimportant compared with the variations accompanying the various manifestations of schizophrenia.

It seems desirable to comment further upon gastro-intestinal motor functions. This will be done by making excerpts from a text-book [1] which will serve as standards for comparison. These are as follows:

According to Schlesinger's classification,[3] which has received rather general acceptance, four varieties of tonus are distinguished: The orthotonic, hypertonic, hypotonic and atonic. He regards the orthotonic stomach as one which contracts on its contents with sufficient force to maintain a tubular form, even with a moderate amount of ingesta, and he assumes that the orthotonic stomach is normal because most frequently seen and because it performs its functions in a normal manner. . . . . The hypertonic stomach shows an excess of tonicity. It is short, has a small, flattened gas-bubble, is broadest at the cardia, and its walls narrow steadily to the pylorus, giving it a steer-horn form and an oblique or transverse position. The hypertonic stomach, though relatively infrequent is not pathologic. . . . . His conception of a hypotonic stomach is one which evidences relaxation of its longitudinal muscle-fibers by an increase in length, and consequent sagging downward. The circular fibers are also relaxed and, with the patient standing, the barium meal broadens the diameter of the lower pole, which sinks below the umbilicus. The upper pars media is somewhat narrowed by the tendency to approximation of its vertical walls. . . . . The atonic stomach shows relaxation to an extreme degree. Ingesta which would completely fill an orthotonic stomach now merely fill the expanded, basin-like lower pole. The vertical walls of the pars media approach each other, closely enough in some instances to retard momentarily the descent of the barium. The gas-bubble, without support below to give it a semi-lunar shape, appears fusiform. . . . . The atonic stomach should be discussed in connection with the normal stomach, for it is a defective physiologic action rather than a pathologic condition.

Further standards for comparison may be referred to briefly as follows:

With the stomach empty at the end of six hours and the head of the motor meal anywhere from the cæcum to the hepatic flexure the gastric motility is considered normal. . . . . Hyperperistalsis (gastric), with an increase of the number (three or more) and depth of the waves on both curvatures, is seen typically in obstructing lesions of the duodenum. . . . . The normal limit for fairly complete evacuation of the small bowel, as defined by roentgenologists who have occupied themselves with the matter, ranges from 8 to 15 hours after taking the barium meal. . . . . Hurst[4] suggests the following as an average time table for the "head" of the ingested meal:

Cæcum	4 hours.
Hepatic flexure	6 hours.
Splenic flexure	9 hours.
Pelvic colon (sigmoid)	12 hours.

From this point on, the rate of progress will depend upon the time and frequency of stooling, and as this occurs ordinarily once daily, a 24-hour variation is easily possible under normal conditions. Twenty-four to forty-eight hours is regarded by many roentgenologists as a fair time basis for the passage of bariumized food through the digestive tract.

The procedure followed in each case was identical. On the night before the observations were begun the patient was given a laxative and an enema. This was deemed advisable because no laxatives or enemas were permitted while the observations were being made. Early the next morning a barium meal * was given and within the following half-hour fluoroscopic examinations and radiograms of the stomach and duodenum were made in both the erect and prone postures. No food was permitted until after a six-hour radiogram was taken. Thereafter the patient ate regular meals and followed the usual hospital routine. Twenty-four hours after the barium meal was ingested radiograms were made in both the erect and prone postures, but otherwise only the prone postures were used. Observations were made on six consecutive days and occasionally for longer periods, unless all barium had in the meantime been evacuated.

* This solution was composed of 180 gm. of barium sulphate, two tablespoonfuls of cocoa-sugar mixture, two parts of which were cocoa and one part sugar, and 425 c. c. of water. Although this is a relatively large amount of solution it was found desirable after some experimentation to use this amount in order to obtain good definition of the stomach and intestines.

The findings of this study will now be given in some detail. It will be noticed that groupings have been made according to the usual clinical types, the duration of the illness, the actual acuteness or chronicity of the illness, and the presence or absence of obvious mental deterioration. Groupings according to the duration of the illness were made arbitrarily of those patients who had been sick less than five years and those who had been sick for more than five years. There was a sufficient number of the paranoid and hebephrenic types to compare the findings within these types of (1) the acutely ill and the chronically deteriorated patients, and (2) those whose weight was markedly different.

In an attempt to determine what clinical manifestations are important among the acutely ill, groupings were made of the paranoid type of (1) those patients who were actively hallucinating and (2) those who were described as having acute hallucinations, confusion, and feelings or ideas of being affected by strange influence. It should be understood that in all cases the clinical manifestations noted were those present at the time the roentgenologic observations were made.

In the tabulations which follow it has been found more convenient to group separately the position, tonus, and motility. Position is recorded in inches, tonus in percentage of type, and motility in hours subsequent to the barium meal. The general averages only of the various clinical groups are given.

A study of Chart 1 reveals some interesting variations in visceral position of the different groups. The general level of all hebephrenics is from 0.3 in. to 1.4 in. lower than that of all schizophrenics, while that of all catatonics is from 0.1 in. to 2.4 in. higher than that of all schizophrenics.* By comparing groups in which there is obvious mental deterioration with those acutely ill and not obviously deteriorated it is found that in the former groups the stomach is from 0.1 in. to 0.7 in. lower, the cæcum from 0.5 in. to 1.5 in. higher, the hepatic flexure from 0.1 in. to 1.2 in. lower, the transverse colon from 0.3 in. to 0.9 in. higher, and the splenic

CHART 1.—POSITION.*

Stomach
Cæcum
Hepatic Flexure
Transverse Colon
Splenic Flexure

* This probably does not represent accurately the visceral position in the catatonic type because in the group observed only one patient presented negativism and general muscular hypertonicity at the time observations were made. In this patient the visceral position was from 1.5 in. to 3.6 in. higher than that of all schizophrenics.

CHART I.—POSITION.*

Grouping	No. of Cases.	Stomach		Cæcum		Hepatic Flexure		Transverse Colon		Splenic Flexure	
		Prone.	Erect.	Prone.	Erect.	Prone.	Erect.	Prone.	Erect.	Prone.	Erect.
All D. P.	51	+1.5	−1.5	−3.6	−4.6	+3.4	+1.4	−1.5	−3.2	+5.4	+3.9
All Paranoid D. P.	32	+1.5	−1.4	−3.6	−4.4	+3.5	+1.5	−1.4	−2.9	+5.0	+4.1
All Hebephrenic D. P.	13	+1.2	−2.0	−3.2	−4.5	+3.1	+1.1	−1.7	−4.0	+4.8	+2.5
All Catatonic D. P.	5	+1.6	−1.1	−4.4	−4.8	+3.7	+2.4	−0.7	−2.9	+6.3	+6.3
Simplex D. P.	1	−2.0	−4.5	−3.5	?	+3.5	?	−4.0	?	+4.5	?
All D. P. (less than five years duration)	30	+1.4	−1.5	−3.7	−4.8	+3.5	+1.5	−1.7	−3.1	+5.1	+4.2
All D. P. (more than five years duration)	21	+1.4	−1.7	−3.4	−4.4	+3.4	+1.4	−1.2	−3.2	+5.2	+3.6
All D. P. (obviously deteriorated)	11	+0.9	−1.8	−3.3	−4.3	+3.3	+0.8	−1.2	−3.5	+5.7	+3.5
All D. P. (not deteriorated)	40	+1.5	−1.5	−3.8	−4.7	+3.4	+1.6	−1.5	−3.1	+5.0	+4.0
All D. P. (acute condition)	25	+1.4	−1.6	−3.7	−4.3	+3.3	+1.2	−1.8	−3.3	+5.1	+4.1
All Paranoid D. P. (acute condition)	14	+1.7	−1.4	−3.7	−5.0	+3.5	+1.0	−1.7	−3.3	+5.8	+4.8
All Paranoid D. P. (chronic deteriorated)	7	+1.2	−1.9	−3.6	−3.9	+2.9	+0.6	−1.1	−3.5	+5.4	+3.5
Acute Paranoid D. P. (hallucinating)	7	+1.2	−1.8	−4.0	−5.4	+4.1	+1.4	−2.0	−3.8	+6.0	+6.1
Acute Par. D. P. (hall., confusion, ideas influence)	12	+1.3	−1.6	−3.7	−5.2	+3.6	+0.8	−2.2	−3.6	+5.3	+4.6
Acute Paranoid D. P. (normal weight)	6	+1.7	−1.8	−3.3	−5.1	+3.8	+1.2	−1.3	−4.0	+6.8	+4.4
Acute Paranoid D. P. (40 lbs. underweight)	6	−0.2	−2.7	−4.3	−4.8	+2.9	+0.7	−3.4	−3.8	+4.0	+3.3
Acute Hebephrenic D. P.	7	+1.1	−2.4	−3.9	−4.8	+2.4	+0.6	−2.9	−4.5	+3.7	+1.6
Chronic Hebephrenic D. P.	6	+1.7	−1.4	−2.9	−4.3	+4.0	+1.6	−1.2	−3.4	+6.0	+3.6
Acute Hebephrenic D. P. (normal weight)	2	+3.7	−1.3	−4.3	−5.8	+3.4	+1.3	−2.0	−4.8	+4.8	+2.8
Acute Hebephrenic D. P. (40 lbs. underweight)	3	−1.0	−2.8	−4.0	−4.7	+1.7	+0.2	−4.2	−5.2	+2.5	+0.8
Chronic Hebephrenic D. P. (normal weight)	3	+1.8	−0.2	−1.8	−3.0	+4.8	+3.5	+0.3	−0.2	+6.7	+5.5
Chronic Hebephrenic D. P. (40 lbs. underweight)	2	−1.8	−5.3	−5.3	−5.8	+1.3	−0.3	−3.5	−5.5	+1.7	+0.8

* In each case the lower pole of the stomach, the lowest portion of the cæcum and transverse colon and the highest portion of the hepatic and splenic flexures was determined by measuring the distance in inches of these points from the level of the iliac crests. In recording, the plus sign indicates inches above and the minus sign inches below the iliac crests.

flexure from 0.3 in. to 2.8 in. lower than these parts in the latter groups.

This would suggest that in the acutely ill patients the position of the stomach is somewhat higher, while there is a relative ptosis of the more freely movable parts of the colon. The relative ptosis of the more fixed parts and a higher position of the more freely movable parts of the colon in the obviously deteriorated groups suggests a more general relaxation and probably a greater stability of position in these groups. These findings may also suggest that the factors which permit a relative ptosis of the more freely movable parts in the acutely ill have by continued action caused a relaxation of the more fixed parts.

Comparison of visceral position in patients who differ markedly in weight but who otherwise belong to the same group indicates a consistent ptosis of all parts which varies directly with the loss of weight. However, it was found that the variations in weight were equally distributed throughout all groups and therefore the influence of weight in this study becomes a constant factor.

It was found that the different physical types were evenly distributed throughout all groups, with the exception that there was a slightly higher percentage of the asthenic type among the hebephrenics. In the general groups of schizophrenia the sthenic type was more common as there was 65 per cent of this type, 20 per cent of the asthenic type, and 15 per cent of the hypersthenic type.

Slight abdominal relaxation was present in 10 per cent of the total group. The cases showing this were proportionally distributed throughout the various groups with the result that this factor was practically negligible.

A comparison of visceral tonus of the different groups as shown in Chart 2 likewise reveals some interesting findings. No consistent difference of visceral tonus is found by comparing the paranoid and hebephrenic groups with the groups including all schizophrenia. In the catatonic group there is a definite and consistent tendency toward visceral hypertonicity. No special changes are noticed because of duration of illness nor because of marked differences in weight. The most striking differences in visceral tonus are noticed in comparing the acute, actively hallucinating paranoid group with the chronic, obviously deteriorated paranoid group. In the former there is a marked and consistent tendency

CHART 2.—TONUS.

CHART 2.—TONUS.

Grouping.	Stomach.				Cæcum.				Transverse Colon.					Descending Colon.						Sigmoid.					Rectum.				
	HE	O	HO	A	HE	O	HO	A	HE	O	HO	A	?	S	HE	O	HO	A	?	HE	O	HO	A	?	HE	O	HO	A	?
All D. P.	7	59	20	4	9	63	28	0	31	51	16	0	2	2	19	59	16	0	4	22	35	22	0	21	14	39	21	6	20
All Paranoid D. P.	16	65	16	3	9	63	28	0	32	53	12	0	3	0	15	66	19	0	0	19	40	19	0	22	12	47	16	6	19
All Hebephrenic D. P.	23	46	23	8	8	61	31	0	38	31	31	0	0	8	31	38	8	0	15	15	31	31	0	23	7	31	31	8	23
All Catatonic D. P.	20	60	20	0	20	60	20	0	20	80	0	0	0	0	20	60	20	0	0	60	0	20	0	20	40	20	20	0	20
Simplex D. P.	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
All D. P. (less than five years duration)	17	63	17	3	7	70	23	0	23	50	27	0	0	3	17	53	27	0	0	23	37	30	0	10	17	33	30	7	13
All D. P. (more than five years duration)	19	52	24	5	15	52	33	0	43	52	0	0	5	0	24	67	0	0	9	19	33	10	0	38	10	47	10	5	28
All D. P. (obviously deteriorated)	27	55	9	9	9	73	18	0	45	45	10	0	0	0	36	46	0	0	18	27	37	9	0	27	9	55	9	0	27
All D. P. (not deteriorated)	15	60	22	3	10	60	30	0	27	53	17	0	3	3	15	62	20	0	0	20	35	25	0	20	15	35	25	8	17
All D. P. (acute condition)	16	64	20	0	12	68	20	0	28	48	24	0	0	0	20	56	24	0	0	28	36	24	0	12	20	32	32	4	12
All Paranoid D. P. (acute condition)	7	71	22	0	7	79	14	0	28	50	22	0	0	0	14	57	29	0	0	28	43	14	0	14	14	50	14	0	22
All Paranoid D. P. (chronic deteriorated)	29	57	14	0	14	72	14	0	57	43	0	0	0	0	43	57	0	0	0	43	29	14	0	14	14	43	14	0	29
Acute Par. D. P. (hallucinating)	0	57	43	0	0	100	0	0	0	43	57	0	0	0	0	43	57	0	0	14	29	57	0	0	14	29	29	14	14
Acute Par. D. P. (hal., confusion, ideas influence).	0	75	25	0	8	83	8	0	8	59	33	0	0	0	8	50	42	0	0	17	33	33	0	17	8	42	17	8	25
Acute Par. D. P. (normal weight)	17	50	33	0	0	83	17	0	17	50	33	0	0	0	17	50	33	0	0	33	17	50	0	0	17	50	33	0	0
Acute Par. D. P. (40 lbs. underweight)	0	66	17	17	0	50	50	0	0	83	17	0	0	0	0	67	33	0	0	17	83	0	0	0	17	66	0	0	17
Acute Hebephrenic D. P.	29	57	14	0	14	57	29	0	29	29	42	0	0	0	29	57	14	0	0	14	29	43	0	14	14	14	58	14	0
Chronic Hebephrenic D. P.	17	33	33	17	0	67	33	0	50	33	17	0	0	17	33	17	0	0	33	17	33	17	0	33	0	50	0	0	50
Acute Hebephrenic D. P. (normal weight)	50	50	0	0	0	100	0	0	0	50	50	0	0	0	0	100	0	0	0	50	50	0	0	0	50	0	50	0	0
Acute Hebephrenic D. P. (40 lbs. underweight).	0	67	33	0	33	33	34	0	67	0	33	0	0	0	67	33	0	0	0	0	0	67	0	33	0	33	33	34	0
Chronic Hebephrenic D. P. (normal weight)	0	33	67	0	0	67	33	0	67	33	0	0	0	33	33	34	0	0	0	33	0	33	0	34	0	33	0	0	67
Chronic Hebephrenic D. P. (40 lbs. underweight).	0	50	0	50	0	100	0	0	50	50	0	0	0	0	50	0	0	0	50	0	100	0	0	0	0	100	0	0	0

NOTE.—HE=Hypertonic. O=Orthotonic. HO=Hypotonic. A=Atonic. S=Spastic. ?=Not determined. All numerals indicate percentages.

CHART 3.—MOTILITY.

Grouping.		Stomach Peristalsis. HE	N	HO	Stomach. 6-hour Retention.	Ileum. 6-hour Retention 0	+	±	Ascending Colon. Cæcum. Retention.	Ascending Colon. Retention.	Transverse Colon. Meal.	Transverse Colon. Retention.	Descending Colon. Meal.	Descending Colon. Retention.	Sigmoid. Meal.	Sigmoid. Retention.	Rectum.* Meal.	Rectum.* Retention.
All D. P.	RL5D	14	43	43	11	11	76	16	43+ 3	41+ 2	10	58+ 3	20	66+ 9	28	74+ 12	33	92+ 21
All Paranoid D. P.	RL5D	12	38	50	12	6	75	19	43+ 1	42+ 1	11	61+ 2	18	72+ 8	29	79+ 9	33	90+ 13
All Hebephrenic D. P.	RL5D	8	54	38	15	15	77	8	37+ 1	34+ 1	7	44 0	20	44 0	26	54 0	30	92+ 5
All Catatonic D. P.	RL5D	40	40	20	0	20	60	20	62+ 1	53 0	16	77+ 1	25	96+ 1	38	96+ 3	43	101+ 3
Simplex D. P.	RL5D	?	?	?	0	?	?	?	24 0	24 0	6	24 0	24	? 0	24	48 0	24	72 0
All D. P. (less than five years duration)	RL5D	17	50	33	13	6	77	17	44+ 3	47+ 2	10	64+ 3	20	77+ 8	32	82+ 9	37	109+ 17
All D. P. (more than five years duration)	RL5D	10	33	57	10	19	67	14	37 0	33 0	9	48 0	18	54+ 1	26	63+ 2	27	71+ 4
All D. P. (obviously deteriorated)	RL5D	18	46	36	18	18	72	9	38 0	29 0	11	48 0	21	53 0	27	58 0	28	76+ 1
All D. P. (not deteriorated)	RL5D	13	42	45	10	10	73	17	45+ 3	44+ 2	10	60+ 3	19	71+ 9	30	78+ 12	34	95+ 20
All D. P. (acute condition)	RL5D	24	48	28	8	12	72	16	48+ 3	48+ 2	10	66+ 3	20	81+ 7	33	86+ 8	38	109+ 16
All Paranoid D. P. (acute condition)	RL5D	22	50	28	0	0	72	28	44+ 1	48+ 1	10	72+ 2	18	91+ 6	35	91+ 6	41	108+ 9
All Paranoid D. P. (chronic deteriorated)	RL5D	29	29	42	28	14	86	0	45 0	33 0	14	51 0	22	60 0	26	62 0	32	75 0
Acute Paranoid D. P. (hallucinating)	RL5D	14	43	42	0	0	57	40	52+ 1	63+ 1	11	96+ 2	19	132+ 4	41	110+ 4	48	120+ 5
Acute Par. D. P. (hall., confusion, ideas influence)	RL5D	8	67	25	0	0	67	33	49+ 1	53+ 1	10	80+ 2	20	101+ 6	38	99+ 6	42	109+ 8
Acute Par. D. P. (normal weight)	RL5D	17	17	66	0	0	67	33	57+ 1	60+ 1	9	88+ 2	15	110+ 4	29	104+ 4	36	112+ 4
Acute Par. D. P. (40 lbs. underweight)	RL5D	0	50	50	33	0	67	33	44 0	52 0	9	76 0	25	102+ 3	40	100+ 3	48	108+ 3
Acute Hebephrenic D. P.	RL5D	14	43	43	28	14	86	0	51+ 1	45+ 1	9	51 0	22	52 0	27	62 0	34	113+ 4
Chronic Hebephrenic D. P.	RL5D	0	67	33	0	16	68	16	21 0	21 0	6	36 0	18	36 0	24	36 0	24	68+ 1
Acute Hebephrenic D. P. (normal weight)	RL5D	50	0	50	50	0	100	0	36 0	27 0	6	36 0	15	36 0	24	60 0	36	120+ 2
Acute Hebephrenic D. P. (40 lbs. underweight)	RL5D	0	67	33	0	33	67	0	48 0	40 0	6	48 0	18	56 0	24	64 0	32	96+ 1
Chronic Hebephrenic D. P (normal weight)	RL5D	0	67	33	0	0	100	0	18 0	18 0	6	32 0	18	32 0	24	40 0	24	48 0
Chronic Hebephrenic D. P. (40 lbs. underweight)	RL5D	0	50	50	0	50	0	50	24 0	24 0	6	36 0	24	36 0	24	48 0	24	84+ 1

NOTE.—Numerals under stomach and ileum indicate percentages. RL5D with accompanying numerals indicate number of instances of retention longer than five days. The remaining numerals indicate hours after the barium meal. HE=Hypertonic. N=Normal. HO=Hypotonic. O=None. +=Slight. ±=Marked.

* By rectum is meant the distal third of the pelvic colon.

toward visceral hypotonicity, while in the latter there is a definite tendency toward hypertonicity. No similar differences are found between the acute and chronic hebephrenic groups, the only difference between these two groups being a tendency toward hypertonicity of the stomach in the acute hebephrenic group.

Visceral motility in schizophrenia as shown in Chart 3 is most illuminating. It is fortunate that this most important function of the digestive tract can be so readily demonstrated. The visceral motility of the paranoid and hebephrenic groups appears quite similar to that of schizophrenia in general. The catatonic group on the contrary shows definitely more active peristalsis of the stomach and greater sluggishness of the intestines. Gross variations in weight appear to have no influence upon motility. Apparently there are marked differences in visceral motility according to the duration of the illness. That these differences are probably due to relative acuteness and chronicity of illness is shown by comparing the acutely and chronically ill in the paranoid and hebephrenic groups. In both the acute, actively hallucinating and the chronic, obviously deteriorated paranoid groups the peristaltic activity of the stomach is fairly good. This activity is apparently more effective in the acutely ill, because in this group there is no six-hour gastric retention, while in the chronic group 28 per cent show six-hour gastric retention. The motility of the intestines of these groups is distinctly different. The hypomotility of both the small and large intestines in the acutely ill paranoid is very striking, while the motility of the intestines of the chronic deteriorated paranoid patients is essentially normal. A similar relationship is found between the acute and chronic hebephrenic groups with the exception that the hypomotility of the colon of the acute hebephrenics is not so marked as that of the acute paranoid, and the motility of the small intestines of the acute hebephrenic is very good and definitely better than that of the chronic hebephrenic.

Unfortunately the figures indicating colonic retention in most of the groups do not represent the facts, because it was not feasible to continue observations for longer than five days after the barium meal. An attempt to compensate for this inadequacy was made by noting the number of patients showing a retention of barium in different parts of the colon for longer than five days. The relative frequency of this retention is shown in Chart 4, where percentages

retention longer than five days. The remaining numerals indicate [illegible] • By rectum is meant the distal third of the [illegible]
tonic. O = None. + = Slight. * = Marked.

CHART 4.—PERCENTAGE OF RETENTION LONGER THAN FIVE DAYS.

Grouping.	Number of Cases.	Cæcum.	Ascending Colon.	Transverse Colon.	Descending Colon.	Sigmoid.	Rectum.
All D. P.	51	6	4	6	18	24	41
All Paranoid D. P.	32	3	3	6	25	28	41
All Hebephrenic D. P.	13	8	8	0	0	0	36
All Catatonic D. P.	5	20	0	20	20	60	60
Simplex D. P.	1	?	?	?	?	?	?
All D. P. (less than five years duration)	30	10	7	10	27	30	57
All D. P. (more than five years duration)	21	0	0	0	5	10	19
All D. P. (obviously deteriorated)	11	0	0	0	0	0	9
All D. P. (not deteriorated)	40	8	5	8	23	30	50
All D. P. (acute condition)	25	12	8	12	28	32	64
All Paranoid D. P. (acute condition)	14	7	7	14	43	43	64
All Paranoid D. P. (chronic deteriorated)	7	0	0	0	0	0	0
Acute Paranoid D. P. (hallucinating)	7	14	14	29	57	57	72
Acute Par. D. P. (hall., confusion, ideas influence)	12	8	8	17	50	50	67
Acute Par. D. P. (normal weight)	6	17	17	33	67	67	67
Acute [illegible] D. P. (40 lbs. underweight)	6	0	0	0	50	50	50
Acute Hebephrenic D. P.	7	14	14	0	0	0	57
Chronic Hebephrenic D. P.	6	0	0	0	0	0	17

of retention are given. These findings tend to emphasize what has already been said about colonic motility in schizophrenia. The marked colonic hypomotility of the catatonic group is again made evident. The colonic hypomotility of the hebephrenic is definitely less conspicuous than that of either the catatonic or paranoid groups. In the paranoid groups the hypomotility is most noticeable in the distal third of the colon. In general the relative acuteness or chronicity of the illness seems to be the most constant factor in determining colonic motility. This is shown most definitely by comparing the acute, actively hallucinating and the obviously deteriorated paranoid groups. It will be seen that in the latter group there is no retention longer than five days while in the former group colonic hypomotility reaches a maximum. Practically speaking this means that over 50 per cent of all acute, actively hallucinating paranoid schizophrenic patients would show retention of barium for longer than five days in the distal third of the colon and about 75 per cent of them would show this retention in the rectum. If barium is retained to this extent it is reasonable to expect that food residue would be retained for a similar length of time. In other words, when the acutely ill schizophrenic patient partakes of a meal and is left to his own resources, there is a small chance that the residue from that meal will leave his colon in less than five days, a much greater chance that it will remain in his colon for two or three weeks, and at least a possibility that it might never be evacuated.

It may be helpful now to compare some schizophrenic groups with other types of psychoses. For this purpose the findings of the manic-depressive depressive, manic-depressive excited, and a non-psychotic group are presented in Chart 5. It will be seen that the visceral position in hypomanic patients is definitely higher than that in all other groups, that there is a slight relative ptosis of the stomach and more fixed parts of the colon in the obviously deteriorated schizophrenic, and that there is a tendency to higher position of more fixed parts and a relative ptosis of more freely movable parts of the colon in the acute paranoid schizophrenic.

A comparison of visceral tonus presents the following: A marked tendency toward hypotonicity in the acute, actively hallucinating paranoid schizophrenic; a similar but less marked tendency in the general groups of schizophrenia and in depressions; a slight

CHART 5.—POSITION.

POSITION.

Grouping.	No. of Cases.	Stomach. Prone.	Stomach. Erect.	Cæcum. Prone.	Cæcum. Erect.	Hepatic Flexure. Prone.	Hepatic Flexure. Erect.	Transverse Colon. Prone.	Transverse Colon. Erect.	Splenic Flexure. Prone.	Splenic Flexure. Erect.
Acute Paranoid D. P. (hallucinating)	7	+1.2	−1.8	−4.0	−5.4	+4.1	+1.4	−2.0	−3.8	+6.0	+6.1
All D. P. (obviously deteriorated)	11	+0.9	−1.8	−3.3	−4.3	+3.3	+0.8	−1.2	−3.5	+5.7	+3.5
All D. P.	51	+1.5	−1.5	−3.6	−4.6	+3.4	+1.4	−1.5	−3.2	+5.4	+3.9
Manic-depressive excitement (hypomanic)	16	+2.0	−0.8	−3.2	−3.6	+2.8	+1.4	−0.4	−2.3	+5.1	+3.5
Manic-depressive depression	35	?	−1.1	?	−4.2	?	+1.2	?	−4.1	?	+4.0
Without psychosis	18	?	−2.1	?	−4.3	?	+2.4	?	−4.2	?	+3.4

TONUS.

	Stomach.				Cæcum.				Transverse Colon.					Descending Colon.						Sigmoid.					Rectum.				
	HE	O	HO	A	HE	O	HO	A	HE	O	HO	A	?	S	HE	O	HO	A	?	HE	O	HO	A	?	HE	O	HO	A	?
Acute Paranoid D. P. (hallucinating)	0	57	43	0	0	100	0	0	0	43	57	0	0	0	0	43	57	0	0	14	29	57	0	0	14	29	29	14	14
All D. P. (obviously deteriorated)	29	55	9	9	9	73	18	0	45	45	10	0	0	0	36	46	0	0	18	27	37	9	0	27	9	55	9	0	27
All D. P.	7	59	20	4	9	63	28	0	31	51	16	0	2	2	19	59	16	0	4	22	35	22	0	21	14	39	21	6	20
Manic-depressive excitement (hypomanic)	44	56	0	0	19	69	12	0	44	56	0	0	0	0	56	38	0	0	6	25	50	0	0	25	19	44	6	0	31
Manic-depressive depression	14	72	14	0	0	74	26	0	6	49	40	5	0	?	?	?	?	?	?	?	?	?	?	?	6	51	11	3	29
Without psychosis	22	61	17	0	0	72	28	0	6	72	22	0	0	?	?	?	?	?	?	?	?	?	?	?	6	55	0	0	39

CHART 5.—CONTINUED

MOTILITY.

	Cæcum. Retention.	Ascending Colon. Retention.	Transverse Colon. Meal.	Transverse Colon. Retention.	Descending Colon. Meal.	Descending Colon. Retention.	Sigmoid. Meal.	Sigmoid. Retention.	Rectum. Meal.	Rectum. Retention.
Acute Paranoid D. P. (hallucinating)....	52+	63+	11	96+	19	132+	41	110+	48	120+
RL5D	1	1		2		4		4		5
All D. P.)obviously deteriorated).....	38	29	11	48	21	53	27	58	28	76+
RL5D	0	0		0		0		0		1
All D. P.	43+	41+	10	58+	20	66+	28	74+	33	92+
RL5D	3	2		3		9		12		21
Manic-depressive excitement (hypomanic)	28	17	8	24	13	29	19	34	21	47
RL5D	0	0		0		0		0		0
Manic-depressive depression	53+	53+	8	82+	19	96	29	104+	36	110+
RL5D	1	1		10		?		19		21
Without psychosis	47+	39	10	42	17	49	24	59	30	67+
RL5D	1	0		0		0		0		1

CHART 6.—PERCENTAGE OF RETENTION LONGER THAN FIVE DAYS.

Grouping.	Number of Cases.	Cæcum.	Ascending Colon.	Transverse Colon.	Descending Colon.	Sigmoid.	Rectum
Acute Paranoid D. P. (hallucinating).....	7	14	14	29	57	57	72
All D. P. (obviously deteriorated).....	11	0	0	0	0	0	9
All D. P.	51	6	4	6	18	24	41
Manic-depressive excitement (hypomanic).....	16	0	0	0	0	0	0
Manic-depressive depression	35	3	3	29	?	54	60
Without psychosis	18	0	0	0	0	0	6

tendency toward hypertonicity in the chronic, obviously deteriorated schizophrenic; and a marked tendency toward hypertonicity in hypomanic patients.

The motility of the colon of these groups shows distinct variations. These may be expressed briefly as follows: Most marked hypomotility in the acute, actively hallucinating paranoid schizophrenic; an almost equally marked hypomotility in depressions; a definitely less marked hypomotility in the general group of schizophrenia; approximately normal motility in the chronic, obviously deteriorated schizophrenic; and a definite hypermotility in hypomanic patients.

These variations in motility of the colon are more strikingly presented in Chart 6 which shows no retention of barium for longer than five days in the hypomanics, practically none in the chronic, obviously deteriorated schizophrenic, a rather high percentage in the general group of schizophrenia, and an amazingly high percentage of retention in the depressions and in the acute, actively hallucinating paranoid schizophrenic.

Comments.

Having observed in the function of the digestive system such definite variations accompanying different clinical manifestations of schizophrenia there naturally follows a desire to understand the relation of these variations to the needs of the personality. This understanding may be facilitated by utilizing the observations of Eppinger and Hess,[5] Kempf,[6] Cannon,[7] and others.

A brief review of some of these observations may be helpful. The vegetative nervous system is of prime importance to the individual. To serve the vegetative nervous system by affording greater contact with and control over the environment the cerebrospinal nervous system was evolved. The sympathetic and autonomic divisions of the vegetative nervous system are diametrically opposed in function. The sympathetic division in serving the instinct for preservation of the individual is most potent and diffuse in action. The cranial portion of the autonomic division conserves bodily resources while the sacral portion attends to sexual functions and to evacuation of the pelvic colon and the bladder. Pain, fear, rage, anxiety, or any intense emotion is accompanied by

predominant action of the sympathetic division. This action prepares the individual to make a supreme effort for self-preservation. Such action continues for a considerably longer period than the cause of the intense emotional state. While the sympathetic division is in control all unnecessary (autonomic) functions cease. Among the many changes noticed in such reaction are hyperglycemia * and inhibition of digestive processes. Peristaltic activity ceases and there is a relaxation of the musculature of the digestive tract. These changes have been observed in animals under stress of intense emotions. Less intense emotional states may be accompanied by predominant action of the autonomic division.

In view of these observations it will be interesting to return to a consideration of the relation of the digestive motor functions to various psychotic states as reported above. It has been observed that the more acute the psychotic symptoms, the poorer the tonus and motility of the digestive tract. This is what would occur if the sympathetic division were predominant in action. These changes are most noticeable in the acute paranoid schizophrenic patients who were actively hallucinating. In such cases there can be no doubt but that most intense emotions are experienced. The struggle is so desperate that acts of violence are committed. The predicament of these patients is much worse than that of the enraged or frightened animal, because the source of the intense emotions is within themselves, therefore ever present and not subject to modification through attack upon or escape from it. The fact that visceral reaction accompanying intense emotions outlasts the cause adds to the predicament of these patients. It is evident also from these studies that the visceral reaction in schizophrenia continues until apathy or dementia terminates the struggle. Not until then do digestive motor functions return to their normal state.

Closer study of the findings of the different clinical forms of acute schizophrenia reveals the fact that the action of the sympathetic division is not predominant throughout the digestive tract. In the paranoid and hebephrenic forms gastric peristalsis appears normal while in the catatonic form it seems hyperactive. In the hebephrenic form the motility of the small intestines is greater

* It is interesting that several observers, 8, 9, 10, by means of sugar tolerance tests have found a definite tendency toward hyperglycemia in psychoses characterized by intense emotions.

than that of the normal. It seems then that the emotional reactions are seldom sufficiently intense to cause a predominant sympathetic action throughout the entire digestive tract and further that the colon is most susceptible to sympathetic control.

In the catatonic form a curious reaction of the colon is observed. Tone is definitely increased while motility is markedly decreased. In other words the colon reacts as do the voluntary muscles, *i. e.*, with excessive muscular tension (apparently a part of preparation for action) and very limited capacity for action.

It appears then that the dissociation of the personality in schizophrenia includes disharmony in function of the digestive tract; that this is due to excessive vagatonia in some parts and excessive sympathicotonia in other parts; and that this disorganization of motor functions reaches a maximum in acute catatonic schizophrenia.

The study of the digestive motor functions may be approached from a quite different viewpoint often suggested by the naive query as to whether colonic stasis causes the psychosis or *vice versa*. Such a query may involve a consideration of the James-Lange theory [11] of the peripheral origin of emotions or of the belief that auto-intoxication arising from colonic stasis may be a cause of personality disorders.

No definite answer can be given in either case. However, it is more consistent with the present understanding of personality disorders to regard visceral changes as manifestations of these disorders rather than as a cause or an effect. It may be that a certain visceral reaction having become established may tend to perpetuate the psychotic condition.

This conception is liable to attack since no practical tests have thus far been devised for the determination of certain toxic substances known to be present in the colon and which may be present elsewhere in the body. In these studies it has been observed that the more closely clinical symptoms approach those of a delirious condition the greater is the degree of colonic stasis. There have also been reports [12] of the remarkable efficacy of colectomy in the treatment of psychoses. On the other hand, it is the more general experience that the removal of foci of infection frequently has no marked influence upon the course of psychotic illnesses. Bacteriologic and bio-chemical tests have furnished meager evidence of

auto-intoxication. In this laboratory it has been observed repeatedly that there is improvement in digestive motor functions concomitant with clinical improvement. Barium studies have been made in approximately 400 cases, the results of which indicate that with rare exceptions colectomy is justifiable only when the prognosis is known to be very poor and then merely as a last resort.

Conclusions.

Roentgenologic observation of gastro-intestinal motor functions in 51 cases of schizophrenia affords the following general conclusions:

1. Definite changes in gastro-intestinal motor functions are found in schizophrenia.

2. The changes are somewhat characteristic of the different clinical types.

3. The more acute the psychosis is, the more abnormal are the changes.

4. Gastro-intestinal motor functions are normal in chronic deteriorated cases of schizophrenia.

5. The visceral reaction to intense emotions in acute schizophrenia is analogous to that observed in lower animals when experiencing fear, rage, or other intense emotions.

6. In acute schizophrenia the colon is most susceptible to sympathetic control.

7. In acute schizophrenia sympathetic control of certain functions and concomitant autonomic control of other functions contributes to disorganization of digestive processes.

8. In 70 per cent of acute, actively hallucinating cases of schizophrenia there is retention of barium or of food residue in the colon for a period longer than five days.

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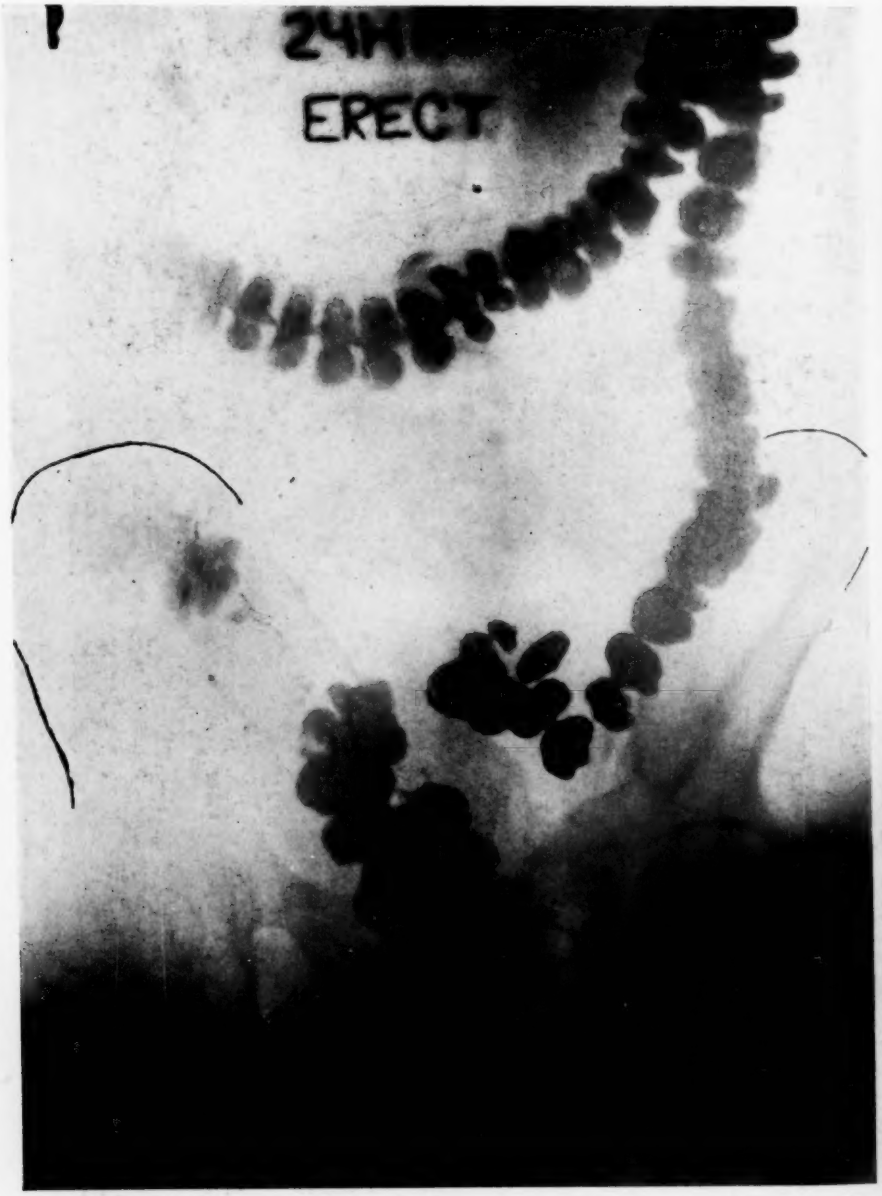
CASE 1.—Semi-chronic D. P. Age 27. Marked six-hour gastric retention.

CASE 2.—Obviously deteriorated D. P. Age 63. Unusually active stomach with good tone. Considerable barium already passed into small intestines ten minutes after it was ingested.



CASE 3.—Acute catatonic D. P. Age 29. Hypertonic colon in high position, but pelvic colon is still filled with barium five days after the meal.

CASE 4.—Acute, actively hallucinating paranoid D. P. Age 28. Colon seven days after barium meal, showing rather poor tone and marked hypomotility.

CASE 5.—Chronic deteriorated D. P. Age 35. All barium evacuated in 24 hours except for appendiceal retention.

BLOOD GROUPS IN SCHIZOPHRENIA AND MANIC-DEPRESSIVE PSYCHOSIS.

By THEOPHILE RAPHAEL, M. D., OLIVE M. SEARLE, M. S., AND WILLIAM SCHOLTEN, M. D.

State Psychopathic Hospital, Ann Arbor, Mich.

Through the recent work of Kretschmer,[1] Wertheimer and Hasketh,[2] and others the relationship of somatic constitution to schizophrenia and manic-depressive psychosis has come to represent a very important consideration. This work, however, has been largely based upon anatomic or morphologic study. In view of the importance of the problem it was felt that an investigation also from the standpoint of fundamental physiologic pattern might at least prove of interest and possibly even of actually supporting value through supplementation of the data already reported morphologically.

Among various possible approaches from this standpoint there suggested itself as especially interesting the question of blood grouping in these two psychoses, blood group being generally regarded as of definitely constitutional quality.

Our series comprised 800 schizophrenics and 300 manic-depressives, of both sexes, and distributed racially as indicated in Tables 1 and 2. Although the manic-depressive series is smaller than the schizophrenic group, it is felt nevertheless that the former is in all probability quite large enough to reveal specific grouping trends if present. Likewise the uniformity of the results actually obtained would appear to indicate the series used as at least in a practical sense reliable. Four hundred and sixty-seven it might be mentioned of the schizophrenics and 221 manic-depressives fall into the so-termed European group of Ottenberg[3] for which a satisfactory average or normal standard appears to have been established.

The determination of blood groups was carried out essentially in accordance with the simplified technic of Moss,[4] using known serums of groups 1 and 2 and the cells of the unknown subjects. The known bloods were carefully checked by cross agglutinations

TABLE 1.

Racial Distribution.

SCHIZOPHRENIA.

Nationality	No. of cases	Per cent of total
German	130	16.3
English	113	14.1
Polish	66	8.3
Irish	43	5.4
Italian	18	2.3
Scandinavian	18	2.3
French	17	2.1
Negro	15	1.9
Russian	14	1.8
Scotch	14	1.8
Austrian	11	1.4
Hebrew	10	1.3
Greek	9	1.1
Dutch	6	0.8
Finnish	6	0.8
Armenian	5	0.6
Mixed	284	35.5
*Miscellaneous	21	2.6

* Magyar, Roumanian, Hungarian, Swiss, Spanish, Bohemian, Syrian, Indian, Belgian, Croatian, Czeck, Serbian, Turk.

TABLE 2.

Racial Distribution.

MANIC-DEPRESSIVE PSYCHOSIS.

Nationality	No. of cases	Per cent of total
English	60	20.0
German	49	16.3
Irish	16	5.3
Dutch	14	4.7
Scotch	13	4.3
Polish	11	3.7
French	7	2.3
Hebrew	7	2.3
Scandinavian	6	2.0
Mixed	106	35.3
*Miscellaneous	11	3.7

* Magyar, Russian, Greek, Negro, Belgian, Italian, Swiss, Welsh.

of both cells and serums of other known bloods, and were always used fresh and undiluted. Cells to be tested were obtained by mixing a few drops of blood from a finger prick with physiological salt solution. A drop of each known serum was placed at either end of a microscope slide and a drop of the unknown cell suspension thoroughly mixed with each. These were allowed to stand at room temperature with frequent re-mixing and examination, both macroscopically and microscopically for at least 20 minutes. The bloods were grouped according to the classification of Moss.

The results obtained have been arranged in tabular form (Table 3). It is apparent from this (also Fig. 1) that the distributions

TABLE 3.

Blood Group Distribution in Schizophrenia and Manic-Depressive Psychosis.

Class of subjects	No. of cases	Blood groups (Moss) I	II	III	IV
		%	%	%	%
Average[5]	9600	5.8	38.7	11.3	44.2
European type[5]	8325	4.6	43.4	12.8	39.2
Schizophrenia, total	800	6.1	41.4	11.5	41.0
Manic-depressive, total	300	7.7	40.3	8.3	43.7
Schizophrenia: European type	467	6.4	41.3	10.5	42.0
Manic-depressive: European type	221	6.3	39.4	7.7	46.6
Schizophrenia, total: Asthenic type	283	7.4	39.6	11.0	42.0
Schizophrenia, total: Asthenic, Athletic and Displastic types	434	6.5	41.9	9.9	41.7
Manic-depressives, total: Pyknic type	151	8.6	41.1	10.6	39.7
Schizophrenia: European type, Asthenic, Athletic and Dysplastic types	247	6.5	42.5	8.9	42.1
Manic-depressives: European type, Pyknic type	112	4.5	41.1	10.7	43.7

found for the two psychotic series (total) show no essential differences between themselves and likewise conform very closely to

the general average or normal blood group formula determined by certain American workers.[5] The same is true also in the case of the "European" average as compared to the "European" schizophrenics and manic-depressives save that the latter seem relatively slightly low in Group III and high in Group IV. However it is very questionable whether these differences are of sufficient magnitude to be of any valid significance.

In view of the suggested relationship [1, 2] between body type and psychosis analysis was also made of blood grouping in this relation (Table 3 and Fig. 2). In this connection it should be men-

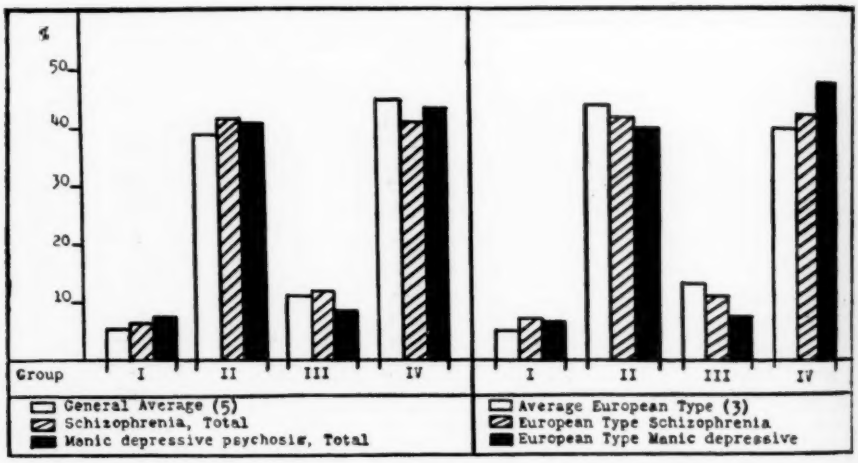


FIG. 1.

tioned that the determination of body types in view of the size of the combined series although carefully made was carried out impressionistically and without the application of formal anthropometric procedures. However subject to this possible limitation, it is readily seen from this analysis that the formulæ determined for the asthenic [1] schizophrenics, the most frequent single body type found in this psychosis conforms very closely to the average formula. The same is also true apparently for the asthenic, athletic and dysplastic schizophrenics combined, these types according to Kretschmer [1] comprising in total 83.3 per cent of the habiti determined by him in his series of 175 subjects. The pyknic manic-depressives, representing the most frequent single habitus occurring

in this psychosis,[1] also show no especial contrast either to the average formula or to that determined for the asthenic, athletic and dysplastic schizophrenics (Fig. 2).

Analysis relative to body type is likewise negative on the basis of the European fraction of the series although the number of cases in this category may not be quite large enough to warrant entirely valid deduction.

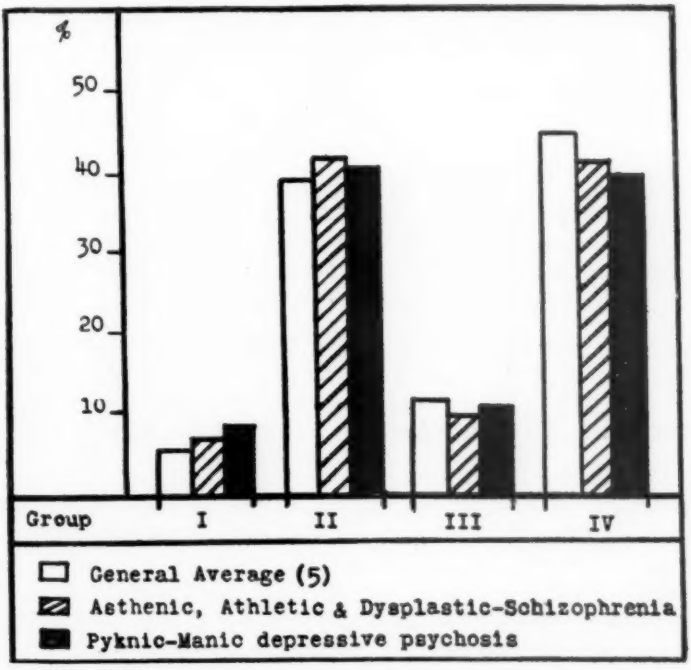


FIG. 2.

In conclusion, on the basis of this work, assuming the series to be satisfactory and the diagnoses correct, it would seem that no specific relationship can be established on the basis of the ordinary standards, between blood group distribution and schizophrenia and manic-depressive psychosis. In corollary from the standpoint of constitution if there is a specific relationship obtaining in these psychoses as regards genotypic physiologic pattern it does not appear to include the quality of blood type.

It might be of some interest possibly to investigate such series from the standpoint of Guthrie and Huck[6] according to whom 27 blood groups are biologically conceivable instead of the four ordinarily assumed.

Grateful acknowledgment is made to Drs. E. A. Christian, H. Ostrander and W. M. Dobson, superintendents of the Pontiac State Hospital, Kalamazoo State Hospital and Veterans' Bureau Hospital, No. 100, respectively for permission to work with cases in their institutions and for courtesies extended during the carrying out of the same.

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Notes and Comment.

Dr. Kline's Address at Cincinnati.—The Presidential Address of the 83d Annual Meeting of The American Psychiatric Association in the scope of its recommendations, illustrates one of its major motifs—the ever-broadening ramifications and pyramiding importance of psychiatry in the social realm. Dr. Kline has presented recommendations of the utmost importance: this year should indeed see the beginning of a new epoch, a fitting tribute on the centenary of Pinel's death.

With almost unwarranted generosity making but brief comment on the attacks of political ballahoos and other misguided individuals, Dr. Kline passes over the discredited assault upon St. Elizabeths Hospital, and presents to us a broad scheme for the utilization of this splendid institution in the training of personnel for state hospital staffs. The use of mental hospitals as training centers is one of the themes of his address. He emphasizes the extramural extensions of care in the shape of social case work and urges the inclusion of a considerable part of training for all social workers to be given in mental hospitals. This is a timely suggestion. There is no social case work, no so-called social service, that is not psychiatric social work. One is reminded in this connection of Dr. White's remark in the second preceding annual address: "Analysis, splitting up into specialties, has been the order for a generation, and there are almost no men in the country who are able to compass in any effective way the work of all these specialties and reintegrate them into a picture of the individual which is usable therapeutically. Now psychiatry stands in a peculiarly favorable tactical position with reference to this possibility." It is this very breadth of view which is found in modern psychiatry that makes mandatory upon those who deal with the sick an intimate preliminary association with the conditions and problems to be encountered in the modern mental hospital. Dr. Kline urges that all nurses shall receive such training before graduation; a reform which will contribute immeasurably to the improvement of nursing care and the diminution of convalescent invalidism.

The address comments pointedly on remedial measures aimed at the present over-crowding of state institutions and the existing uncertainty as to the future load which confronts each state. The Massachusetts Department of Mental Diseases under Dr. Kline's direction has engaged in a constructive program to determine what the facts may be in this connection, and the address promises much of great administrative utility to be forthcoming in the near future. A study of psychiatric epidemiology such as he has in mind is more than desirable, even though rather difficult to envisage at the present state of society. A most stimulating suggestion is that to the effect that a job analysis of psychiatric care is needed to "not only reveal methods for doing our work more efficiently, but permit of a larger rôle being played in the rapid progress psychiatry is now making."

The address reviews many aspects of the great extension of psychiatric and psychopathological viewpoint throughout the realm of the social sciences. It deals with what is being accomplished in preventive work—pre-school habit clinics, school clinics, and social case work of industrial and related sorts. It stresses the achievements from an enlightened consideration of the problem of the mental defective. It refers to the utilization of psychiatrists in penology and in criminology, and emphasizes the future that lies in this direction. "The constantly increasing importance of psychiatry in relation to problems other than those dealing with the hospital care and treatment of the mentally sick directs attention to new responsibilities . . . . as well as opportunities . . . . in the contacts existing and forming between psychiatry and the fields of the various social sciences." It would seem that Dr. Kline's recommendation for cooperation with the Social Science Research Council looks toward a greater development than the history of medicine includes. In association with this group which functions as a center for all the broad extensions of science in relation to man in society, psychiatry is indeed entering upon its true field, where, in Dr. Kline's language, "responsible and thoughtful groups like those mentioned are considering the same problem with the same purpose in view . . . . [and] it is especially important that the varying viewpoints be considered."

This masterly document expands in a notable fashion those subjects which have been conspicuous in the Presidential addresses

of the recent past. Having taken up its duty in the post-war reconstruction work, psychiatry as reflected in these papers—Dr. White's inauguration of the concept of biological integration not only as a fundamental postulate of psychopathology but as a working principle of all those interested in our problems, Dr. Haviland's pronunciamento on Psychiatry and the State, and Dr. Kline's statement of this year—goes now to its important place among agencies alleviating ills of the home, the community, and the broader social units which are beyond reach of the specialist in part-aspects. And as the utilization of psychiatry and psychopathology grows, their internal critique increases so that facts diligently accumulated by careful research take more and more the place of traditions and fantasies.

H. S. S.

THE AMERICAN JOURNAL OF PSYCHIATRY.—With this issue of the JOURNAL a change is inaugurated in the frequency of its publication and a number of additions have been made to its editorial staff.

The JOURNAL will appear as a bi-monthly, issuing six instead of four numbers each year. As announced in the April issue, this will result in an increase in the amount of material published, by about two hundred pages annually.

Drs. Harry Stack Sullivan, Director of Clinical Research, Sheppard and Enoch Pratt Hospital, Towson, Md., and Clarence B. Farrar, Director of The Toronto Psychiatric Hospital, Toronto, Ontario, have been made associate editors, together with Dr. Arthur L. Shaw, of Utica, N. Y., representing the National Association for the Study of Epilepsy.

Six collaborators have been added to the JOURNAL staff, by vote of the Council of the Association. These are Dr. Karl M. Bowman, Chief Medical Officer, Boston Psychopathic Hospital, Boston, Mass.; Dr. Henry A. Bunker, Jr., Assistant Director Psychiatric Institute of the N. Y. State Hospitals, Wards Island, New York; Dr. William Rush Dunton, Jr., Medical Director Harlem Lodge, Catonsville, Md.; Dr. Franklin G. Ebaugh, Director Psychopathic Hospital, University of Colorado, Denver, Colo.; Dr. Theophile Raphael, First Assistant Physician, State Psychopathic Hospital, Ann Arbor, Mich.; and Dr. Edward A. Strecker, Medical Director

Pennsylvania Hospital, Department for Mental and Nervous Diseases, West Philadelphia, Pa.

With the assistance of these additional members of the JOURNAL staff, to whom the editor bids a hearty welcome, it is hoped, by those who have heretofore been responsible for its conduct, to make the JOURNAL more than ever an exponent of all that is best in psychiatry, and to keep pace with the rapid progress which is being made in that most important field of medicine.

The senior editor, whose connection with the JOURNAL was formed just thirty years ago, three years after it became the property of the Association, is extremely gratified that the JOURNAL has been able to attract to its working force a group of men who have already made their mark in various fields of psychiatric work, and realizes, as do no doubt many of the readers of the JOURNAL, that the time has come when he should pass into other hands much of the work incident to the position he holds, by the favor of his associates and the members of The American Psychiatric Association.

The time must soon come, in the natural order of things, when he must wholly resign the responsibility for the conduct of the JOURNAL to others, and he feels assured that he can do so with the highest hopes for its future and the most sincere faith in the ability of those who have been, or may be in the future, selected to guide its course, to more satisfactorily carry on the work when he shall relinquish it.

Association and Hospital Notes and News.

THE EIGHTY-THIRD ANNUAL MEETING OF THE AMERICAN PSYCHIATRIC ASSOCIATION.—The meeting of The American Psychiatric Association held in Cincinnati on May 31–June 1, 2 and 3, was in many respects a notable one in the history of the Association.

We have already elsewhere commented at some length upon the address of the retiring President, Dr. Kline, and we can only repeat here that his suggestions give promise, if wisely carried out, of much of value in the work of the Association.

The amendments made to the constitution are in the line of progress, and to the better conduct of the affairs of the Association.

The National Association for the Study of Epilepsy has by vote of that body and of the members of the Association, become a constituent part of the older and larger organization, while maintaining in a degree its own organization and interests.

This we believe will be the opening move toward a certain degree of union of all the national organizations interested in the various aspects of psychiatry and neurology.

The meeting was well attended, something over 350 members having registered.

The program was an excellent one and the interest was maintained throughout.

We suggest that there be in the future either less haste to adjourn at noon on the fourth day of the session, or that the program be so arranged that nothing but final business details be left for the last session.

Some of the best papers were put down for Friday morning's session; papers that were bound to provoke discussions of interest, but the time was too brief to permit this.

Regret concerning this haste was expressed by several members and this has also been true as to other last day sessions.

The President reported that the Association had, in accordance with action taken at the meeting in 1926, been incorporated.

DINNER TO DR. WILLIAM A. WHITE.—On Friday, the 13th of May, the medical staff of Saint Elizabeths Hospital gave a dinner to its superintendent, Dr. William A. White. The idea of the dinner grew out of the feeling of release from attack to which the hospital has been subjected for many months past. The medical staff as a whole has been in a state of constant tension during those months and the favorable result of all of the investigations prompted this expression of their feeling of confidence in and loyalty to the hospital and its management. There were fifty-nine people at table and the dinner was interspersed with comments, short talks, music and playlets the subject matter of which referred to local affairs, more particularly to the events that transpired during the investigations. As an expression of mutual good-will and friendliness as between the superintendent and the staff and the members of the staff toward each other it was a great success and served to cement the existing feelings of good fellowship.

THE ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.—A year ago we commented upon the fact that the Medico-Psychological Association of Great Britain and Ireland had been granted a charter by George V and was to be known henceforth as the Royal Medico-Psychological Association.

The April, 1927, number of *The Journal of Mental Science,* the official organ of the Association, contains an illustration and explanation of the coat of arms granted the Association on the twelfth day of October last.

The coat-armor is an attractive one, and, as explained by Lieut.-Col. J. R. Lord, C. B. E., M. D., President of the Association and editor of the JOURNAL, its symbolism " conveys the highest ideal of the Association."

The next annual meeting of the Royal Medico-Psychological Association is to be held in Edinburgh during the week commencing July 18.

The annual meeting of the British Medical Association is to be held at the same time.

During the meeting of the Medico-Psychological Association a celebration of the centenary of the death of Pinel will be held.

A celebration of this centenary was held in Paris, May 30 and 31, under the auspices of various psychiatric and neurological societies, and was honored by the patronage of the President of the Republic.

CONGRESS OF ALIENISTS AND NEUROLOGISTS OF FRANCE AND FRENCH-SPEAKING COUNTRIES.—A neuro-psychiatric congress will be held at Blois, July 25-30. This is the thirty-first session of this congress. It is under the presidency of Prof. Riviart of the Faculty of Medicine of Lille.

NEW PSYCHIATRIC HOSPITAL OPENED BY THE JEWISH MENTAL HEALTH SOCIETY.—The Jewish Mental Health Society of New York is opening at Hastings-on-Hudson a hospital for incipient cases of mental and nervous disorders.

It has secured the Spring Hill Sanitarium together with 55 acres of ground, and has remodeled the buildings to suit the special purposes for which they are to be employed. The institution will be known as The Hastings Hillside Hospital.

It is intended by the society to make this hospital a nucleus for its work in mental health. Dr. Israel Strauss, neuro-psychiatrist at Mt. Sinai Hospital, New York, is president of the society, and is largely responsible for the founding of the hospital.

Dr. Louis Wender is to be medical director.

Book Reviews.

Child Guidance. By SMILEY BLANTON, B. S., M. D. (Cornell), and MARGARET GRAY BLANTON, authors of "*Speech Training for Children,*" etc. Introduction by Thomas W. Salmon, M. D., Columbia University. (*New York, The Century Company, 1927.*)

"Many books in this field treat the problem child . . . . but *that single phase in which the normal child is the problem* . . . . has not been adequately covered"—to repair this defect is the purpose of the book of Margaret and Smiley Blanton. They may well take pride in their achievement. The book under review is striking in many respects, perhaps most of all by reason of its great good sense. It is also thorough, and while it is a fine blend of general truth and specific instruction, it has the peculiar virtue that it is easily read either by a psychiatrist or an intelligent lay parent. Altogether, it justifies Dr. Salmon's foreword: "A wise, timely and useful contribution to the understanding of childhood and the management of some of its problems." It is more by far than this: it is a real contribution to rational genetic psychology—while its intensely practical nature should place it in the curriculum of every medical student who may be called upon to deal with problems of infancy and childhood, and would make it the preferred reference of the physician to expectant parents and to those who are doing badly in handling their children, there are none of us who try to build up the complete exposition of human personality who can afford to deny himself familiarity with the facts which these authors have incorporated in their book.

Remarking that the fetish of inheritance is the lazy man's retreat, the authors continue: "Successful adjustment is not primarily taught by word of mouth, but *by the logic of the situation.* Adjustment is pragmatic; if a *thing works* it becomes incorporated in the being who worked it. If it is socially acceptable in the broad sense, the result is good mental health; if it cannot be tolerated by society, it is bad mental health. . . . . Education for successful emotional and habitual living begins at birth. And since it begins with birth, it deals with such commonplace things as sleeping and eating and moving and crying. It never leaves the plane of the small and the apparently insignificant, for no matter how spectacular the result, it is composed of small acts, performed day by day and moment by moment. Because it deals with commonplace material, so close to our eyes, it is necessary to break it up and hold it away from us, and examine and organize afresh." Such is the purpose of the first part of the book. Chapter II deals with "The Original Endowment." It takes its departure from the work of Mrs. Blanton in the study of new-born and young infants, begun with Dr. Watson at Johns Hopkins. It emphasizes the factors of experience and environment and it

deals particularly intelligently with the factual environment composed of people, including the child's own personality and its effect on those with whom he comes in contact. There is a discussion of conditioned responses, the greater value of which resides perhaps in the dispersion of the myth of "will-power." It is particularly gratifying to the reviewer to find a good if brief treatment of learning through muscle-tensions: "As a working premise, only, it may be assumed that, through vision or direct contact, a mimetic capacity in the individual is stimulated, and that he then takes in his own muscles the postures and tensions of the person observed or felt, and translates them in terms of glandular activity. . . . ." "This capacity is shown very early in infancy, and, indeed, seems to account for much behavior which is usually thought of as 'inherited.'" Any treatment of personality genesis which overlooks this factor, and the related ontogenesis of impulse-tied postural tensions in the individual, omits the feature perhaps of greatest promise for the investigation of "mental" phenomena.

Chapter III, "Learning to Eat," is most praiseworthy. As might be expected, it ties in with Chapter VIII, "Learning to Talk," for the Blantons have outstanding achievements in the field of speech disorders. Chapters IV on the excretory functions and VI on sensory training and VII, "Learning to Walk," carry out the promise of the introduction; to wit, that the foundations of adult personality may be uncovered in their true character as evolutions and combinations of experience derived in the simple form of oral, excretory, sensory, and motor behavior.

Chapter V, "Learning to Sleep," is excellent. The authors deny the superstition that sleep is a passive state occurring when one has nothing else to do and regard as more nearly accurate the notion that sleep is a refuge into which one goes when he can no longer tolerate the waking life. Their accurate observations have shown them that "We are undoubtedly conscious to a great extent during the entire sleeping period, but we select from the environment those things which we wish to notice, and ignore those things which we wish to ignore." With that uniform common sense which so signally characterizes this book, they go on to discuss the subject of training the infant to sleep, remarking that sleeping habits built up in childhood influence the sleep of the adult; "therefore the lessons involved are not for a night but for a lifetime." As examples of the treatment one may quote the following: "One of the commonest causes of poor sleep in children is the attitude of adults in regard to sleep. An astonishing number of otherwise 'adult' grown-ups brag about staying up as though going to bed were something to be ashamed of. . . . . The same thing is true in regard to sleeping poorly of which people often speak with real pride. To a certain type of rather infantile adult it is the earmark of great delicacy to sleep poorly." The book is replete with instructions for those confronted with practical situations. These are clear and to the point and are followed by explanations showing their rationale. Two more quotations from this excellent chapter on sleep: "Children who require that the entire house be quiet in order that they may sleep should be put through a definite system of training." ". . . . the activities and outlets denied the individual during the day will be

present at night, and a restless, talking, walking child is for some reason not finding his best outlets during the day."

Space forbids enlarging on the excellency of the discussion of Enuresis, of Negativisms, and of Speech Disorders.

Part II of this book includes chapters on the Nursery, the Child's Calendar (*e. g.*, "A great deal of the hypochondriasis and the neurasthenic attitude toward illness actually dates from some childhood sickness, which was extremely pleasant and which was made a memorable and joyous occasion . . . ."), and a chapter entitled "The Mysteries" which is one of the sanest discussions of birth, sex, sin, and death which the reviewer has encountered. Chapter XII is "Learning to Adjust to the Group." Chapter XIII discusses "The Laws of Discipline" (*e. g.*, "It is impossible to break a habit without replacing it, just as it is impossible to 'think about nothing.' Therefore an unserviceable habit which has been established in a child must be replaced by a serviceable one. . . . ." "Punishment is for the purpose of changing the type of reaction and not for the purpose of social revenge. . . . . If the misdemeanor is again committed the punishment should be more severe or of a different type, but the same immediate clearing of the atmosphere should take place. . . . . When the punishment is over it should be over, and the parent should not indulge in any period of righteous indignation. They should punish as inevitably, under certain circumstances, as a hot stove would burn, and it should be brought to the attention of the child that 'if you touch the stove again the same thing will happen again.' The stove will not weaken. It will not repent. If, an hour after being burned you touch it again, it will again burn you, but fortunately, will not pout in the meantime.")

There is a good chapter on the subjects which fall under the generic term, Nervousness. "Intelligence" is another subject. The rest of the book is devoted to discussion of individual traits and group factors affecting the self-confidence, aggressiveness, gregariousness, social adequacy, and attitudes toward facts and property, moods, emotion and tension. The last chapter entitled "The Personality Study" organizes the work reflected in the chapters on traits and group factors. The book has a good index.

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The Significance of the Physical Constitution in Mental Disease. By F. I. WERTHEIMER, M. D., Associate in Psychiatry, Henry Phipps Psychiatric Clinic, Johns Hopkins Hospital, and FLORENCE E. HESKETH, Charlton Fellow in Medicine, Johns Hopkins Hospital; with a preface by LEWELLYS F. BARKER, M. D. Medical Monographs X. (*Baltimore: The Williams & Wilkins Company, 1926.*)

This monograph of 72 pages is the first extensive work to appear in English upon the significance of physical constitution in mental disease; but it is owing to its considerable merits, rather than to this circumstance, that it deserves and will well repay a careful perusal by all who are interested in mental disorder and, indeed, in the problems of physical constitution in general.

The volume opens with a brief survey of the age-old history of the preoccupation of the human mind with the question of a connection between external appearance and mental functions—a survey which we could wish were more detailed, conveying with fuller illustration the pervasiveness of this ancient intuition. To de Giovanni is given the credit for having been, apparently, "the first physician who attempted on a large scale the investigation of physical habitus in relation to disease"; and although "he fell into the extreme of trying to prove that 'the cause of the special morbitity of an organism resides in its special morphology,'" he became the founder of a productive school of clinical anthropometrists. According to Bauer, his morphological types or "combinations" are the prototypes of the body forms described by Kretschmer. The authors have called attention to the interesting point that Esquirol, "in the very beginning of scientific psychiatry," compiled statistics (published in 1816) regarding the external appearance of his patients, of whom he said—anticipating Kretschmer by just one hundred years—that "when persons of the lymphatic or phlegmatic temperament, or those who have a pale exsanguinous constitution, fall into mania or monomania, their disorder is more liable than that which occurs in other constitutions to pass into dementia or incoherence." This passage, the authors point out, is the more remarkable because it is the only one where Esquirol "seems to anticipate in a way the modern distinction of affective reaction types with acute, attack-like course, and schizophrenic reaction types with more chronic and often deteriorating development."

The difficulty of distinguishing between hereditary and acquired traits, of saying what is "constitutional" and what is not, a difficulty sufficiently great in the sphere of human morphology and almost overwhelming in the sphere of psychobiological integration, causes the authors to offer a purely working definition of human constitution as "the correlative unity of those morphological, physiological and psychobiological developments of the individual which are definitely more influenced by heredity than by environment"—a definition similar to though somewhat more specific than Draper's definition of constitution as "a set of basic unit characters, predetermined by heredity and influenced to some extent by environment." An interesting and convenient feature is the tabulation given by the authors of the rather frequent attempts which have been made in the past to describe constitutional types from the standpoint of morphology; though it is difficult to say how closely these various attempts correspond with one another, their comparison at any rate exhibits "a remarkable uniformity of the characteristic body forms aimed at by different investigators." Evidently, the authors remark, "it is possible to recognize recurring (*i. e.*, typical) body forms from observations alone"; and they believe the description of types given by Kretschmer to be the most useful, though very similar types have been described before by others.

But the actual task of investigating morphological and psychopathological correlations resolves itself into the following questions: "Can recurrent typical body forms be determined by inductive anthropometric methods? Can body types, differentiated by observation and description, be correlated

with exact anthropometric data? Are there any correlations between anthropometric and psychopathological findings?" The discussion of these three questions occupies the remainder of the volume. To the first the authors reply in the negative. Since the plotting of frequency distribution curves for both absolute measurements and indices gave no indication of a trimodal frequency distribution, as might have been expected if the pycnic, athletic and asthenic types were sufficiently distinct (or of bimodal frequency distribution, as would be the case if pycnic and non-pycnic body forms were antagonistic types); and since no measurements or indices were found, except for the Pignet Index, to be selectively significant in assigning cases with respect to body type; "the conclusion was therefore reached that these body types could probably not yet be found inductively by anthropometric methods or expressed accurately in anthropometric terms of body proportions." Nevertheless, observation types can be used as a starting point and then correlated with anthropometric measurements—a reply in the affirmative to the second question; but "absolute measurements, such as Kretschmer used in his book, are the least conclusive for such a procedure, for slight differences in absolute measurements may be found in any two groups of individuals"—unless, indeed, one calculates, as the reviewer has attempted to do, the mathematical significance of these differences. And this brings us to one of the important and interesting considerations dealt with by the authors in their work; the devising of a "constitutional index" which will define the physical habitus of an individual and so represent "the characteristic morphology of the individual as a whole, as contrasted with such indices as the cephalic index, which states the proportion between two measurements of one part of the body only."

The attempt to construct such an index was based upon de Giovanni's conception that the impression of the existence of morphological types is dependent on the different size of the body cavities and their relation to the limb length; such an index must therefore indicate *in toto* the variations in relationships between trunk cavity and limb length. The former was expressed as the product of three skeletal measurements—(1) the transverse chest diameter, (2) the antero-posterior chest diameter, and (3) the trunk height; the latter, the leg length, the sum of the femur length and tibia length; and the ratio between them as:

$$\frac{\text{Leg length} \times 10^3}{\text{Transverse chest diameter} \times \text{antero-posterior chest diameter} \times \text{trunk height}} \times 100$$

When the measurements are expressed in centimeters, the indices work out at values ranging from 153 to 337 (in the 65 cases here examined).

Now when the index values for these 65 cases are plotted in a frequency distribution curve, what we observe is that "*the values of the index are in definite relation to the body types obtained from observation.*" In other words, the pycnoid types tend to the lower, the athletic to the higher, index values, the pycnic cases and the asthenic cases being, respectively, lower still and higher still; so that, in fact, there is no overlapping of asthenic

and pycnic, for these are separated by the cases with intermediate index values ranging from 255 to 270. in which there are neither pycnics nor asthenics. Thus the curve indicates "*a gradual transition from lower values to higher values of the different clear and mixed types represented.*" So that "with a sufficiently large number of cases the distribution of body forms would present a normal frequency curve" (even though this curve, as the authors suggest, would probably be asymmetric). In other words, the most clearly differentiated forms—what seem to the eye to constitute distinctive "types"—represent merely the extremes of what is in reality a continuous series, the intermediate portions of which series are occupied, of course, by the less "typical," less characteristic, more or less intermediate forms. Mohr and Gundlach (*J. Exp. Psychol.*, April, 1927), it might be added, have independently stated that the large number of athletic-asthenic and mixed pycnic subjects in their material "is evidence that we are dealing not with sharply defined groups but with the two extremes and a central group"; their distributions "both for the estimate of type and for the physical measurements indicate that we are dealing with a normal distribution constituting a continuous progression from the characteristics that define the extreme asthenic to those that determine the 'best' pycnic habitus."

The objectivity of the trunk volume-leg length index proposed by Wertheimer and Hesketh must exercise an appeal for those who have been somewhat disconcerted by the disparity between the findings, in terms of Kretschmer types, of various investigators as reported in the literature of the subject. However irreconcilably two observers might disagree as to the type of habitus represented by a given patient, they could hardly find room for disagreement regarding an index based on anthropometric measurements which each could carry out with results identical within a few millimeters; however they might disagree as to the number of pycnic individuals, for instance, present on a given ward (an alarming example of which Kolle has recently given), all might accept the statement that it contained so and so many patients with an index value of under 210 and so and so many with an index of under 230. Instead of attempting to reconcile and inwardly digest Möllenhoff's finding that 20 per cent of his schizophrenics, Weissenfeld's that 90 per cent of his schizophrenics, and Gruhle that 45 per cent of his normal group, were leptosomes, would it not carry greater conviction if it could be stated, for example, that 80 per cent of schizophrenics, but only 60 per cent of the normal population, have a trunk volume-leg length index of 270 or higher? It might seem so.

The material of the present study comprised 65 unselected male patients, divided for practical purposes into the four groups of (1) predominantly affective reaction types (19 cases), (2) predominantly schizophrenic reaction types (25 cases), (3) organic reaction types (10 cases), and (4) miscellaneous mental cases, largely psychopathic personalities and psychoneuroses (11 cases). For the classification of the morphological types represented by these patients, the descriptions given by Kretschmer were followed in the main. Apropos of the dysplastic cases (numbering 12 in this

series), we believe the author's statement can be wholly concurred in that "dividing cases into pycnic, athletic, asthenic, and dysplastic groups, as Kretschmer does, involves the use of two different principles of classification"; in reality, "cases with dysplastic features can be subsumed under some of the other types too."

An important consideration, upon which the authors very properly lay stress, is that of the growth and age factors in its influence upon morphological types. In particular, the pycnic type is more frequent with advancing age; and this is certainly a point not to be lost sight of, seeing that manic-depressive patients usually have a considerably higher average age than schizophrenic patients. (In this series, 39 years *vs.* 29 years.) Thus, by way of illustrating the difference that correction for the age factor makes, the authors found that of clear manic-depressives of all ages pycnic individuals made up 45.5 per cent, but of clear manic-depressives of 29 or over pycnic individuals made up 66.6 per cent; similarly, 78 per cent of the clear schizophrenic cases of all ages exhibited the leptosome type of physical habitus, but only 58 per cent of the clear schizophrenics aged 29 or over exhibited this type of habitus.

Dispensing with the body types in the Kretschmerian sense and reverting to the trunk volume-leg length index values, independent of the former, for purposes of comparison with the psychiatric diagnoses—if the whole range of index values in the two groups of manic-depressive and schizophrenic cases is divided into three equal parts, "the opportunity is created to determine what psychopathological reactions have an affinity to the index values which are very low (lowest third) and those which are very high (highest third)." This was the result: In the lower third of index values the authors found six patients; in the upper third, 21 patients. Of the group of six patients belonging in the lower third, four had been diagnosed as of the manic-depressive reaction type (index values, 154 to 206). Of the other two, one, who showed dysplastic features, belonged to the schizophrenic reaction type (index, 178); the other also occurred in the schizophrenic group, but was qualified as an atypical case with anxiety features (index, 199). "It is evident that among the lower index values the affective psychoses are predominant." Of the 21 patients occurring in the upper third of index values, there were 14 who had been diagnosed as definitely belonging to the schizophrenic reaction type (index values, 270 to 337). Three of the remaining seven cases occurred in the predominantly affective group, but had been specified as showing schizophrenic features (index values 291, 325, 326). One case in the affective group presented psychoneurotic symptoms (index, 296). Only three patients in this upper third of index values were clearly and without reservation manic-depressive cases (index values 276, 302, 315); but two of these were the two youngest individuals in the entire manic-depressive group. "The predominance of schizophrenic reactions in this group with higher values of the index is apparent." If the important correction for the age factor is made by in-

cluding only those *clear* manic-depressive and schizophrenic cases aged 29 or over, the average index of the former (six cases) is 199, of the latter (12 cases) 260.

Nevertheless, the fundamental question remains, whether the incidence of pycnic and pycnoid individuals among manic-depressive patients, or the incidence of leptosomes among schizophrenic patients, is greater than mere chance would dictate; does either of these psychiatric groups exhibit a higher percentage of the body type in question than does the population at large? The authors recognize this, of course; they explicitly state that since the percentage incidence of body types in the general population is not accurately known "the emphasis of this study had to be necessarily on the contrast between the two psychiatric diagnostic groups—the manic-depressive and the schizophrenic." And although Gruhle, it is true, has attempted to determine a norm in this respect, the reviewer suspects that the authors would reject his findings not only on account of the absence of a correction for the age factor but because of Gruhle's method of sampling the general population. Gruhle, moreover, employed solely the somatoscopic method of Kretschmer, with all its amply attested subjectivity—an appeal to which method, in the hands of any single observer, a little suggests Gibbon's "Abu Rafe was an eye-witness, but who will be witness for Abu Rafe"? Is it not here, in fact, in the approach to this rather basic question, that we should find especially desirable the objectivity attainable with an index based upon precise measurements which remain the same for all observers because free from the subjective element of personal judgment?

The last ten pages, among the most interesting in the book, are devoted to the attempt made by the authors to establish independent correlations between morphological type and prepsychotic personality. But the space allotted to the present review having already been considerably exceeded, attention can be briefly called only to two or three points in the author's excellent discussion. The many attempts to distinguish personality types have been somewhat lacking in success because all have been "based on simplifications which do not do justice to the complicated dynamic interplay between the personality and the social setting." The concept of "schizoid" and "cycloid" personalities is a postulation of personality types in relation to clinical types, the danger of which, the authors well say, following Kahn, "lies in the fact that these two very expanded groups are found again and again, because nothing else is looked for"; moreover, "in the form given to them by Kretschmer they do not constitute a new point of view, but rather the latest ramification of the Kraepelinian system of clinical disease entities." With regard to the affective attitude toward the personal and social environment, by which in everyday life personalities are judged, "it seems that it is possible to distinguish among many individuals two directive tendencies, more or less evident throughout the course of life. Some individuals seek satisfaction in contact with others; . . . . they are always fundamentally in affective contact with the personal and social environment. There are other individuals, on the other hand, who find satis-

faction in difference, in detachment and isolation from the personal and social environment with the emphasis of their emotional experience much less on the other personalities with whom they come in contact and more on the reactions and ramifications of their own mental experiences, both intellectual and imaginative." For these the authors have preferred to coin new terms, referring to the first as *syntropic,* since the tendency in their affective life is "to react together with others, *harmoniously or otherwise,*" and to the second as *idiotropic,* a word of obvious derivation. "These characteristics are not sufficient to constitute personality types, but are sufficiently distinct to denote antagonistic directive tendencies"; yet "practically, the kernel of the groups of individuals described by Jung as introvert and extravert, by Kretschmer as schizoid and cycloid, and by Hoch as shut-in personality, is closely related to these idiotropic and syntropic tendencies." Owing to insufficiently reliable information or to lack of a clear predominance of idiotropic or syntropic tendencies, only 31 cases in the authors' material could be assigned to these two groups; among these, pycnic forms predominated over leptosome in the syntropic group, whose average index was 217, the opposite being true of the idiotropic group, whose average index was 289.

The book closes with a judicious if brief discussion of the implications attending a belief in a fudamental connection between body architecture and mental disease, or disposition to mental disease, in the course of which the authors remark that "a genetic explanation would have to take into account constitutional signs in the physiological sphere" (the "physiological panel" of Draper), calling attention to the facts that the possible variations in simple physiological activities in different individuals have received very little scientific attention, although certain of these activities have been stated to exhibit a remarkable individual constancy "and may well have correlations with other constitutional signs." (In addition to certain examples quoted by the authors from Wuth, compare in this connection, for instance, the recently published observations—*J. Exp. Med.*, Jan., 1927—of the similar values within the same family, but the appreciably different values between different families, as regards the cholesterol content of the blood in guinea-pigs.) In any event, the authors conclude, "although we must assume that structure and function have a definite relationship also in the sphere of psychobiological integration, both the extent and the nature of this relationship are as yet unknown and a field for investigation"; and they close on the note that "the possibility of morphological and psychopathological correlations opens a field for investigation with a bearing upon many lines, and seems to have a significance which no thoughtful clinician can overlook."

A selected bibliography of 95 titles concludes this very readable work, which, as already stated, deserves the careful attention of all who are interested in its subject.

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Freudian Essays on Religion and Science. By CAVENDISH MOXON. (*Boston: The Gorham Press, 1926.*)

This volume of 133 pages comprises a collection of reprints, with one exception, relating particularly to the author's contributions on the psychoanalytic approach to religious matters, but including also chapters on topics that are related more or less distantly to religion. The author, as is well known, is thoroughly Freudian; nevertheless, he lays emphasis on Rank's theory of the birth trauma.

The first five chapters of the book adequately summarize the psychoanalytic conceptions of the origin and development of religious creeds. The remaining six chapters, considered as a whole, are less clearly associated with any specific trend of interest, for they include papers on the theories of Coué, Freudian Criminology, The Development of Libido in Friedrich Nietzsche, and Freud's Death Instinct and Rank's Libido Theory.

The book should be valuable to those who wish to familiarize themselves with the psychoanalytic conceptions of the fundamental principles of religious life.

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Psychoanalysis and the Psychic Disorder of General Paresis. By S. HOLLOS and S. FERENCZI. Translated by GERTRUDE M. BARNES and GÜNTHER KEIL. (*New York and Washington: Nervous and Mental Disease Publishing Co., 1925.*)

In a small monograph of 48 pages the authors present their views on the application of the interpretative technic of psychoanalysis to general paresis in a particularly clear manner. After a brief and pertinent survey of the literature referring to the relationship of the pathological anatomy and the psychic disorders of general paresis, they show by reference to case material how the doctrines of psychoanalysis may be put to use in the explanation of the psychic symptoms of this malady.

It is considered that the brain is "the central organ of the ego functions" and that injury to it produces among other things a *cerebral pathoneurosis,* to which at least part of the mental symptoms are related. "The metaluetic brain infection, by attacking the central organ of the ego function, provokes not only 'symptoms of defect,' but also disturbs, as a trauma would do, the equilibrium in the housekeeping of the narcissistic libido, which then makes itself felt in symptoms of paretic mental disorder." The authors recount the symptoms of patients with grandiose ideas for the purpose of emphasizing the rôle of the compensatory mechanism in the development of the grandiosity. They offer suggestions on the psychology of numbers and on the meaning of mannerisms exhibited by the paretics under observation. General paresis is looked upon by themselves as "regressive paresis."

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Aviation Medicine. By LOUIS HOPEWELL BAUER, M. D., Major M. C., U. S. A., Commandant of the School of Aviation Medicine. Published by authority of the Surgeon General. (*Baltimore: The Williams & Wilkins Co., 1926.*)

This volume of 241 pages is said by the publishers to be the first book on the subject published in America and the first to be published anywhere since the World War. The book appears to be an excellent survey and summary (with a bibliography of more than 400 titles) of all that is at present known concerning the medical aspects of flying, with a natural emphasis upon the proper selection and proper care of the flyer. How large a part the latter may play in safety in flying is indicated by the estimate that of every 100 British aviators killed in the first year of the war, 90 met death because of individual deficiency, in 60 of whom the deficiency was physical in character. The customary Anglo-Saxon policy of *laissez-faire* having in this case been overcome to the extent of the immediate establishing of a special care of the Flyer Service, the fatalities due to physical defects were reduced during the second year from 60 to 20 and during the third from 20 to 12—in itself a seemingly striking justification of the specialty of Aviation Medicine.

The work is divided into three sections of about equal length, dealing with *The Selection of the Flyer, The Physiology of Aviation including the Classification of the Flyer,* and *The Care and Maintenance of the Flyer;* with a supplement containing instructions for carrying out various tests, together with the blank forms in use for recording the physical examination in the Army and Navy air services. There are 35 illustrations and a full index.

Section I devotes separate chapters to general physical qualifications; the eye in aviation; the nose, throat and ear in aviation, including a consideration of equilibrium; neuropsychic factors; and reaction time. Section II deals with the effects of altitude on the respiratory and circulatory systems; the psychological effects of altitude; the classification of subjects with reference to their reaction to altitude; a discussion of certain other tests of this general type; and the effects of wind, cold and speed. Section III discusses fatigue staleness and physical fitness; protective devices; the flight surgeon; aviation accidents; and "airplane dope poisoning"—airplane dope being, we learn, a substance used on the surface of the fabrics covering the wings and bodies of airplanes, at present a much less dangerous composition than was used early in the war. From the chapter headings alone it is apparent that the book contains much of interest to even the most general reader, while for the physician concerned with the medical aspects of aviation it is indispensable.

Of principal interest to the psychiatrist, however, will naturally be the two chapters on neuropsychic factors in aviation and the psychological effects of altitude. While it was formerly the practice to lay the maximum stress on the integrity of the equilibatory apparatus, nowadays the examination of the nervous system "is considered as one of the two most im-

portant factors in the selection of the flyer and the most important factor in the care of the flyer once selected." The quotation of certain passages will best serve to indicate the fact that while this chapter on neuropsychic factors is, perhaps inevitably, the least satisfactory in the book, the difficulties that surround the subject necessitate a tentative and somewhat ingenuously empirical method of approach—for they represent a far cry indeed from Münsterberg's test for the selection, in ten minutes, of street car motormen! Rippon and Manuel are quoted as claiming that the traits of character desirable in the flyer are resolution, initiative, presence of mind, sense of humor, judgment, alertness, cheerfulness, optimism, and not too much imagination. They believe the best pilots are unmarried and consider marriage as "an extra nerve strain." They lay great stress on manual dexterity and consider that a good horseman will make a good pilot. Let us further quote the words of the writers on whom the author chiefly relies: "The following traits are found in the optimum type for flying—*Temperament:* cheerful, stable, self-reliant, aggressive, modest, frank, fond of people, satisfied, punctilious, serious, good coöperation in work and in examination, good sportsmanship, moderate tension, enthusiastic, adaptable. *Intelligence:* precise, penetrating, sharp, alert, resourceful. *Volition:* energetic, quick, deliberate or moderately impulsive, controlled, good tenacity of purpose. The following traits denote an unfavorable type—*Temperament:* depressed, unstable, submissive, pacific, vain, withholding, secretive, loquacious, likes to be alone, hypercritical of conditions, careless, frivolous, poor coöperation, irritable, poor sportsmanship (under adverse circumstances querulous and complaining), exceedingly high tension, lost enthusiasm. *Intelligence:* vague, superficial, dull, hesitant, without initiative, untrained. *Volition:* sluggish, slow, recklessly impulsive, restless, poor tenacity of purpose." But "it is not expected that any one aviator will exhibit all the best qualities to the exclusion of all the poor ones, but the preponderance towards a favorable or unfavorable, satisfactory or unsatisfactory, efficient or inefficient type, will lead to an accurate estimation of the efficiency and true personality of the aviator." What is required is that the flyer "be equal to the requirements of any situation, usual or unusual, and with respect to the unusual be capable of the instantaneous and correct response demanded by the emergency." Note, however (from the succeeding chapter), that, as might have been expected, "after we have selected our group of individuals who show no mental or physical deficiencies which would disqualify from flying, we find from practical experience that a large number of these men will not qualify as fliers. There must be something, then, besides the purely physical and mental factors which go to make up a successful aviator." This unknown factor has so far eluded search; and although the reaction time of the individual has been seized upon as having value in this direction, and the omission of a reaction time test from the examination for the United States Air Service is believed to be a defect, the author does not feel that the tests of this description employed by the French and the Italians give the results that are desired. The author

concludes that the Ruggles Orientator (described in the chapter on the nose, throat and ear is the only mechanism offering possibilities, as yet insufficiently substantiated, looking to the reduction of the 75 per cent who, having met the physical and mental standards, nevertheless fail to graduate from advanced flying school.

From the brief chapter on the psychological effects of altitude we learn that Knight Dunlap found that the primary and important psychological effects of oxygen want relate to attention and voluntary coördination; no other effects not due to failure of either or both of these are noted until the subject reaches the stage in which he is rapidly approaching unconsciousness. The effects of altitude come on the aviator insidiously; "the subject may become absolutely inefficient and not realize it." "The most striking effect of altitude is on the nervous system and results first in stimulation and a feeling of well being. This is quickly followed by a decrease in the field of attention, by an increased distractibility, and by a loss of control of voluntary muscles. At very high altitudes memory, judgment, hearing and vision are impaired, first as a result of the effects on attention and motor coördination, and finally directly, just before unconsciousness supervenes. Sleepiness is common and fainting may ensue. Between 23,000 and 25,000 feet is the upper limit of consciousness for man without oxygen. There may be certain abnormal reactions to low oxygen such as euphoria (continued beyond the initial stage noted above), anger, destructiveness, fear, and silly laughter." It becomes desirable, therefore, to have a test to determine the ability of the individual to compensate for oxygen want. This is carried out by means of low pressure chamber or (in the practical testing of pilots) the Henderson-Pierce rebreather, whereby the examinee is subjected to a progressive reduction in the partial pressure of oxygen. The test is run for 25 minutes, and the subject is graded by the physiologist according to the reaction of the pulse, blood pressure, respiratory volume and oxygen percentage attained, by the clinician according to the heart reaction, and by the psychologist according to time of appearance of first symptoms of deterioration, time of appearance of marked symptoms of inefficiency, etc., as determined by performance tests with the psychological apparatus described. The final class is the lowest grade given by any one of the three observers. Class A is unrestricted as to altitude; class B is restricted to 15,000 feet (meaning that the flyer will not do efficient work above that limit), class C to 8000 feet, and class D is grounded as unfit to fly.

The civilian flight surgeon is yet to develop, but the author believes that as aviation evolves he will be needed fully as much as in military aviation.

H. A. Bunker, Jr.,
New York State Psychiatric Institute.

In Memoriam.

DR. CHARLES HERMAN CLARK.

Dr. Charles Herman Clark died at his home at the Lima State Hospital, Lima, Ohio, on November 15, 1926. His death came rather unexpectedly, although he had not been in good health for some time. He was known to be a sufferer from arterial-hypertension and renal disease including the complication of albuminuric retinitis.

Dr. Clark had been superintendent of the Lima State Hospital from the time of its inception in 1914. He had been called to this duty from the superintendency of the Cleveland State Hospital, which position he had held since 1907. Dr. Clark's public service began in Ohio in 1894 when he entered the service at the Ohio State Hospital for Epileptics at Gallipolis, as an assistant to Dr. H. C. Rutter. In 1895 he was transferred to the Columbus State Hospital where he served under the superintendency of Dr. A. B. Richardson until 1898 when both he and Dr. Richardson were called to Massillon to open the newly constructed Massillon State Hospital. Their stay at Massillon was short however, for in 1899 Dr. Clark accompanied Dr. Richardson to St. Elizabeths Hospital, Washington, D. C., where he remained under the superintendency of Dr. Richardson and Dr. William A. White until 1907, when he was recalled to Ohio to take charge of the Cleveland institution.

Dr. Clark was a native of Ohio, having been born near Mechanicsburg in that state in 1866. His education was obtained in the schools of his native county and the Starling Medical College of Columbus, where he graduated in 1893. Following an interneship in St. Francis Hospital, Columbus, he began his psychiatric hospital service which continued without interruption for thirty-three years. He was a member of The American Psychiatric Association, the American Medical Association and of his state and county medical societies. For many years he had been active in American Psychiatric Association affairs and since 1924 had been a councillor of

the Association. While not a voluminous writer he was the author of many excellent papers upon psychiatric subjects. As a preceptor and developer of young men he was preeminent. Three of his former assistants are now superintendents of state hospitals in Ohio.

As a hospital executive Dr. Clark was in the front rank of American physicians. He was a psychiatrist of outstanding merit, esteemed not only for his skill in mental and nervous disorders, but for his fine personality, his high ideals and his useful citizenship.

He is survived by his wife and daughter who make their home in Lima.

WILLIAM H. PRITCHARD.

DR. ARNOLD LEON JACOBY.

In the death of Dr. Arnold L. Jacoby, which occurred at Springfield, Massachusetts, on April 30, there was lost an outstanding personality in the field of psychiatry and criminology.

While on his way to deliver an address at Hartford he was taken from the train in an acute attack of appendicitis, from which he died three days later.

Dr. Jacoby was graduated from the Medical School of the University of Michigan in 1910. He then entered the medical corps of the navy where he served until 1912. After a brief period in general practice he was for a few months assistant physician and pathologist in the Illinois State Hospital at Anna. He left there in 1915 to become first assistant physician at the Psychopathic Hospital at Ann Arbor and instructor in psychiatry in the Medical School of the University of Michigan. Immediately at the outbreak of the war he returned to the medical corps of the navy. In November, 1917, he was placed in charge of the psychiatric work at the naval prison at Portsmouth, where he organized and directed a fifty-bed psychopathic hospital. At the close of the war, having attained the rank of lieutenant commander in the medical corps of the navy, he returned to Ann Arbor where he continued until July, 1921, when he was chosen to organize and direct the psychopathic clinic of the Recorders' Court in Detroit.

The establishment of this clinic brought to the City of Detroit and the State of Michigan a new era in the administration of the criminal courts. Such an innovation encountered many difficulties which

were successfully met by Dr. Jacoby by his enthusiasm and forceful character and the practical directions into which he developed this new work. In the years of his directorship this clinic developed into one of the outstanding organizations of this country, and has become an indispensable service in the criminal courts of Detroit. Not only did this clinic serve the direct needs of the court in giving to the administrators of the law an insight into the psychiatric aspects of those who came under their charge, but from it radiated a variety of activities that have done much to raise standards of the local administration of the criminal law, and have opened up possibilities that are far reaching.

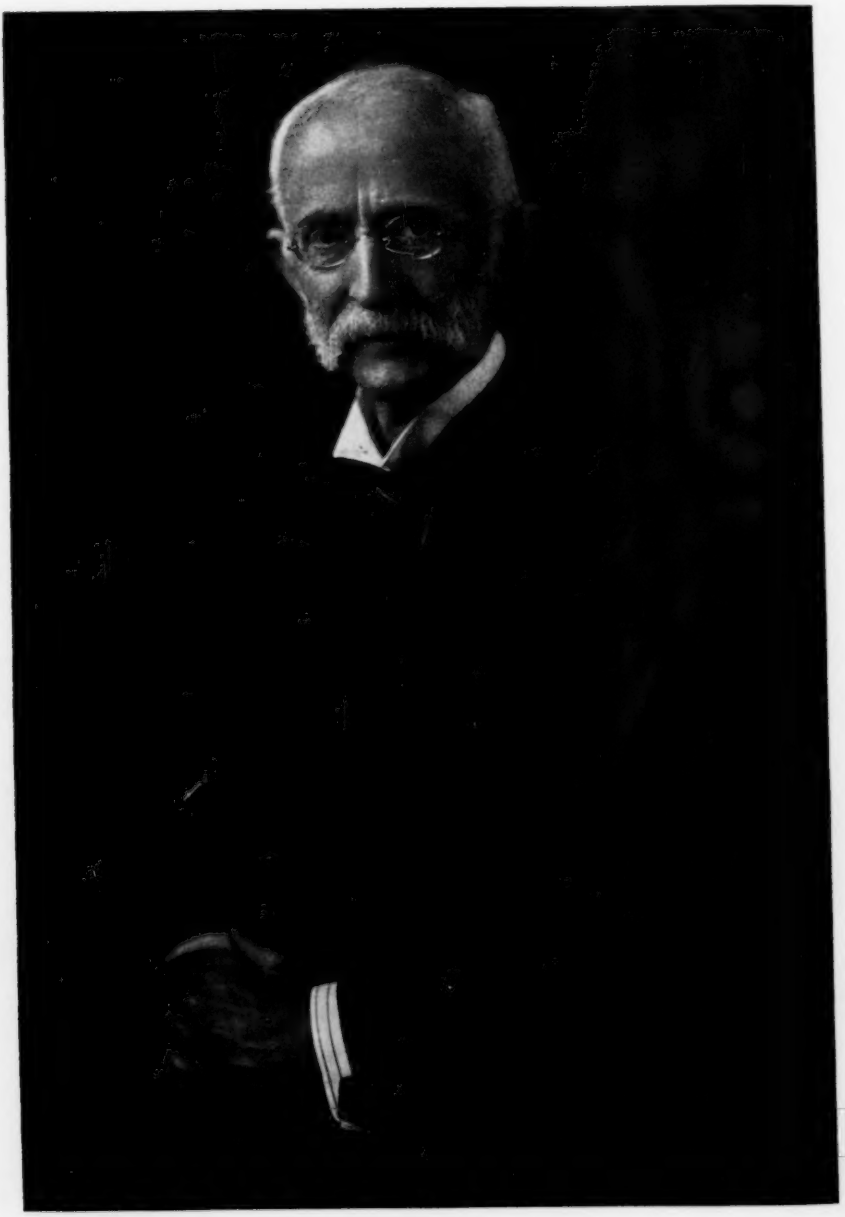
In his research interests he appreciated the value of the great amount of material that was gathered in the clinic and already several noteworthy contributions have been published by him and his associates, and others were in preparation when his work ceased.

He was an active member of several national psychiatric associations and during the past year was secretary of the American Orthopsychiatric Association.

Although only 41 years of age and still at the beginning of his career, his unusual personality, sound psychiatric knowledge and a peculiarly practical insight into problems of human behavior, distinguished him as a man of much promise in his chosen field.

His passing at this time removes one who was much needed in the all too small group of those who are giving to us a better understanding of human conduct and are pointing out more intelligent ways of dealing with the very complex problems of criminology.

ALBERT M. BARRETT.



Henry M. Hurd